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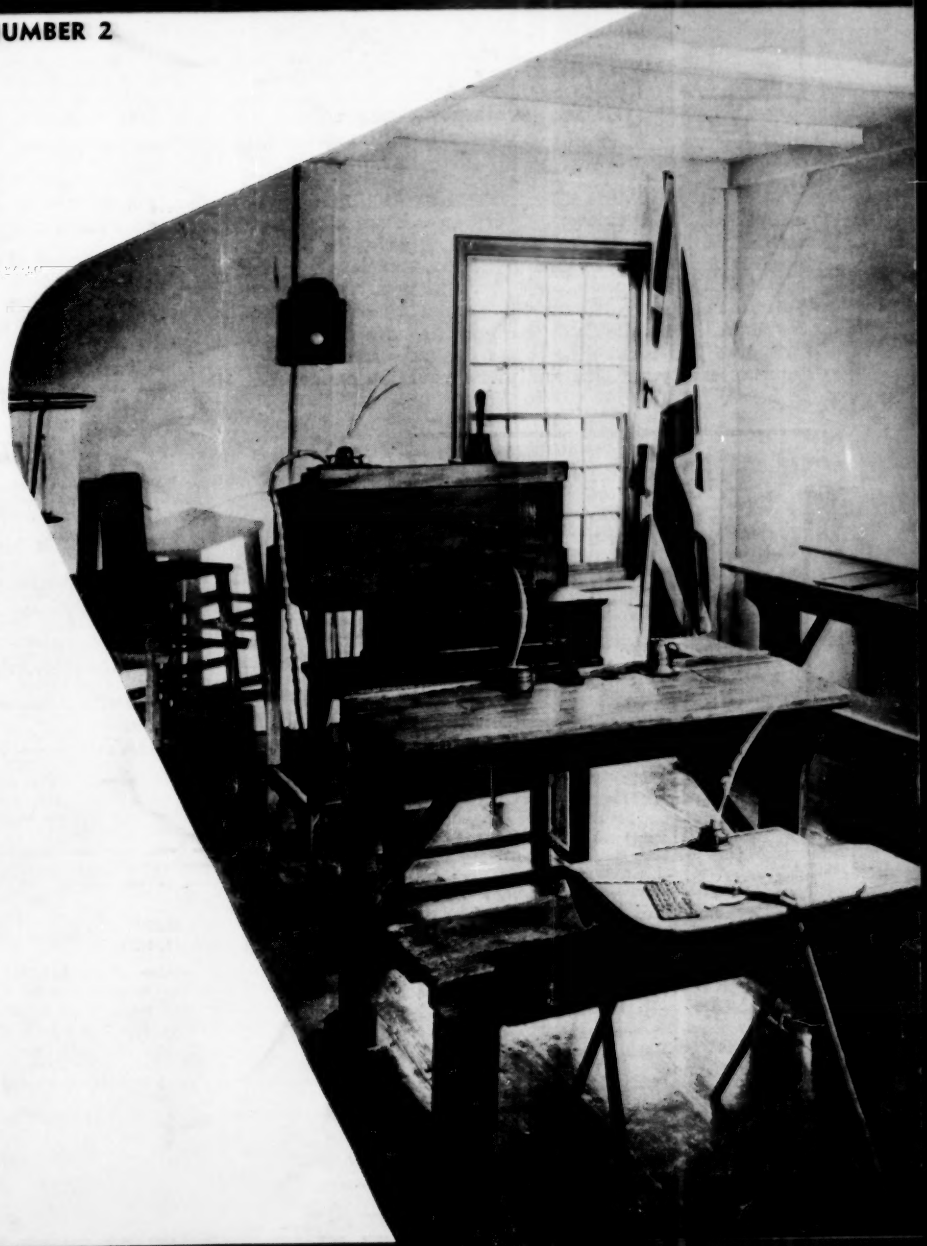

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JOURNAL of EDUCATION

Volume 136 **November 1953** **Number 2**

CONTENTS

		page
Per Cents In the Seventh and Eighth Grades	*Rolland R. Smith*	34
Conservation Concepts in Elementary Education	*Anne Guba*	36
Children Should Be Seen and - - - Heard	*Margaret A. McElroy*	39
The Preparation of a File of Exercises for Developing Study Skills in the Middle Grades	*Helen E. Scott*	40
Formal Analysis as a Problem-Solving Procedure	*Robert L. Burch*	44
Leading Children to Creative Musical Expression	*Gloria MacKay and Doris McIntyre*	48
Developing a "Time Sense" of History	*Harold M. Long*	50
Try-It		54
Research		55
New Books		57
Comments and News		61
Materials		63

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Thanksgiving time brings thoughts of the early settlers, their way of life, their homes, churches and schools.

Pictured on the cover is the interior of The Little Red Schoolhouse at Governor Dummer Academy, South Byfield, Mass. Governor Dummer is the oldest boarding school in America.

Originally built in 1763, the building was restored in 1938, under the direction of William Perry, the distinguished architect who restored colonial Williamsburg, Virginia. Shown in the photograph are authentic period pieces of school-room furniture including pupils' desks and forms, dunce stool, Bible box, and British Union Jack.

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PER CENTS IN THE SEVENTH AND EIGHTH GRADES

Rolland R. Smith

Coordinator of Mathematics
Springfield, Massachusetts

This summer I overheard a waitress say to a customer, "We do not have any 100% bran but we do have 40% bran." I wondered what that 40% meant to the man. Did he automatically think, "a little less than half?" Did he think "40 out of a hundred parts" or perhaps "2 out of 5?" Or was it to him just a trade name?

Leave it to a teacher to have academic thoughts like that when on vacation in a beautiful camping spot! And yet that is quite in line with the thinking a teacher of the seventh or eighth grade ought to have concerning his pupils' understanding of per cents. Pity the poor boy or girl who has to find 42.3% of 952 when he does not have such elementary concepts as mentioned in the first paragraph.

In teaching per cents, or any other topic for that matter, it is important not to lose sight of the forest because of the trees. It is easy to get lost in a mass of details and miss the large point of view. Drill on details is rather discouraging and mastery is of short duration, assuming that it is ever reached, when there is not a background of fundamental understanding.

We can base our thinking in the teaching of per cents upon a good foundation in fractions; at least, in connection with such simple fractions as 1/2, 1/4, 1/3, 3/4 and 2/3. And upon that foundation we can build a clear understanding of per cents. What is more, we can cover all the main topics – a per cent of a number, finding the whole when a per cent is given, discount, commission, per cent of increase and decrease – while still working with such simple per cents as 50%, 25%, and 75%.

Before children reach the seventh grade they are exposed to per cents – in store windows, in the newspapers, in bus advertisements. You cannot pick up a paper without finding in it many applications of per cent, and not in fine type either. The on-the-ball youngsters will have come to think of 50% as ½, 25% as ¼, and so on with the other simpler per cents, just as a matter of having lived in a world of people and advertisements where per cents are in common use.

Our first job in the seventh grade is to make sure that all the children have these basic ideas. Per cents mean hundredths and the most common hundredths, .50, .25, and .75, we may assume, are just as familiar as their fractional equivalents. If they are not, that is the place to start. When a boy or girl hears .50 he should think automatically ½. So when he learns that per cents mean hundredths he transfers (or should transfer) his 50% immediately to ½.

We should first give our students a feeling for the common per cents in terms of simple fractional equivalents before we began any great amount of computation with per cents. And furthermore, we should progress through the main topics of per cents using only the more frequently used per cents before we take on details.

Here are some exercises which suggest how a bird's-eye view can be given before considering the details. A discussion of such exercises will give an over-all picture into which the details can be fitted.

1. Find 50% of 16 and of 324. (This should be done by taking one half of the numbers.)
2. Find 25% of 24 and of 400. (To do this exercise think of 25% as ¼.)
3. Find 75% of 32 and of 240. (Find ¾ of these numbers.)
4. If Mary had 75% of her spelling words correct and there were 16 words on the test, how many did she have correct?
5. Shade 50% of this circle.
6. A sign in a store window read, "25% off on all suits." What would be the sale price of a suit originally marked $60?
7. One year I sold Christmas cards and was allowed to keep 25% of my total sales as pay for my work. How much could I keep from total sales of $120?
8. Where I am working I make $80 a week. I am told that next year I shall get an increase of 25%. How much will I then get per week?
9. Podunkville used to have a population of 400 persons. In ten years it has decreased 25%. What is the population now?
10. The Blues played 8 games and won 4 of them. What per cent of the games did they win? (Think: 4 out of 8 is what fraction?)
11. A pint is what per cent of a quart?
12. A 4-dollar doll, if sold at a discount of 25%, will sell for ? less than $4, or for ? .
13. If 25% of a number is 8, what is the number?

All the above exercises should be done by means of fractions.

14. How long is 100% of your twelve-inch ruler?

This is the first level of learning of computation with per cents. It is the level with which all normal pupils should be very familiar. It is the basis upon which to build. The superior pupils will comprehend this much very quickly and pass on to many more details and enrichment material. It will take a little longer for the average pupils but they soon will spread out to more difficult details of the topics. It may be that the lowest tenth or fifth will not get much further than this first level. If so, take heart that they have gone thus far and understand what they have learned. For them to go further might well be merely to memorize for the moment and then forget – definitely wasted effort.

Now we are ready for the same topics again, all the topics into which per cents in the seventh grade may be divided. This time we shall work with such per cents as 23%, 41%, 59%, 95%,– any whole per cent, 100% or less. And this time we may linger on each subtopic until something like mastery is obtained. We shall take again, finding a per cent of a number, finding what per cent one number is of another, discount, commission, per cent of increase and decrease, and for the first time, nearest whole per cent. Anything bordering on difficulty in the third case of per cents may well be left to the eighth grade.

Appeal to the understanding should continue. This is a transition period between the first level and the abstract drill level. It should be made very clear that a per cent of a number (the per cent being less than 100%) is a fractional part of that number. And furthermore, answers

should be sensible. They should be estimated by simple mental calculations using easily manipulated fractions before being found exactly. Mere mechanical figuring should not be tolerated. The following are suggestive of the kind of exercise that may be used in this connection:

1. About how much is 52% of 264? (It is just a little more than half of 264 which is 132.)

2. Is 81% of 40 about 24, 32.4, or 37.4? (81% is about 80% or 4/5. 4/5 of 40 is 32.)

3. Is 51% of 16 more or less than 8? (It is more than 8 because 51% is more than 50%, and ½ of 16 is 8.)

The so-called second case of per cent also should be put on a firm common sense basis and the third case should receive some attention. For example –

4. 18 is what per cent of 25? (It is not less than 50% because ½ of 25 is 12½. Three fourths of 25 is 3 x 6¼ which is very near 18. 18 must be about 75% of 25. An answer greatly different from 75% should be rejected as an error. It should be a sign of distress and a signal to look for a mistake.)

5. If 60% of a number is 432, what is the number? (*60%* is more than half. It is 60/100 or 3/5. If 3/5 of a number is 432, the number must be more than 432. If *three* fifths is 432, *one* fifth must be one-third of 432, or 144. Then *five* fifths is five times as much.)

Now, of course, there must be drill for mastery of those topics which should be brought to that state. There is no substitute for drill. There is no substitute for hard work on the part of the pupil. The teacher can only set the stage; the pupils must play the roles. The drill stage is the level with which most teachers are familiar. But drill is not synonymous with the teaching of arithmetic. Drill is only a part of the teaching. Drill as we have known it is only the last stage of teaching a topic. Drill comes only after meanings have been established We do not do away with drill but we prepare carefully for it. Mastery comes through understanding *and* drill, not by means of either alone.

The work of the eighth grade, for those who can comprehend it, is more detailed in character. It deals with per cents greater than 100% and smaller than 1%, with tenths of a per cent, and with more difficult applications. All students should understand that there are such things as per cents greater than 100% and should have many simple examples of their use. The intricacies of per cents smaller than 1%, however, should not be crammed down the throats of the slower group. In the eighth grade we are teaching all the children of all the people, and for this reason we must learn better than we have learned how to teach on different levels even in the same classroom. Some pupils can well be shown how to find what per cent 17 is of 23 to the nearest tenth of a per cent, while for others we must be content with finding what per cent 3 is of 12.

In per cents, as in all topics, understanding should come first. All pupils should be led through the understanding level of the fundamental ideas. The superior and average pupils pass from this level quickly to consider the topics in greater detail. Our objective is lasting results, not merely a trained effect that makes a weekly test look good but then is lost.

A school-minded radio announcer in one community devotes a few minutes during his daily 7:45 a.m. broadcast to the cafeteria program of a large local school. He reads the menu for the day, comments on how good it sounds, and how much the pupils will enjoy their lunch.

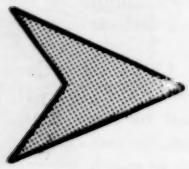
According to the National School Public Relations Association which reported the item in a recent issue of It Starts in the Classroom Newsletter, its monthly roundup of good school public relations techniques, this school-radio station cooperation pays off in several ways:

1. The 1200 pupils look forward to the broadcast and take a great interest in the hot lunch program.

2. Cafeteria workers strive to plan interesting and attractive, as well as nutritious, meals.

3. Parents actually know what is being served and do not have to depend on the child's possibly-biased answer to "What did you have for lunch?"

4. Mother, after slaving over a hot stove to prepare a fine evening meal, no longer runs the risk of hearing from her children: "But that's what we had for lunch today!"



CONSERVATION CONCEPTS IN ELEMENTARY EDUCATION

Anne Guba

National Wildlife Fellow, Boston University, School of Education, 1952-53; Teacher, Sixth grade, Islington School, Westwood, Massachusetts

In this era of our nation's development, the conservation of natural resources is vital to our very existence. Man is slow to realize that his dependence upon natural resources is bound inextricably to his daily living habits. Since children in our schools today will be influential leaders in business, industry, government and agriculture in years to come, it is important that they begin to comprehend in their youth the meaning and scope of conservation. They need to see the relationship between sound conservation measures employing wise use of natural resources and the future security and economy of our country.

The author is indebted to Dr. John G. Read, Professor of Education, School of Education, Boston University, for his guidance and assistance in this project, which was made possible by a fellowship from the National Wildlife Federation, Washington, D. C. This study was undertaken in the interests of advancing conservation principles and techniques in elementary education, and was completed as partial fulfillment of the requirements for the degree of Master of Education at th Boston University School of Education. The project was carried out in the public schools of Newton, Massachusetts, where the writer was engaged as a part-time resource teacher assigned to the Field Science and Conservation Program.

To be guided by a sound conservation attitude as expressed in the philosophy of President William Howard Taft, "Conservation is the preservation of our natural resources for economical use, so as to secure the greatest good to the largest number for the longest time," is today the essence and goal of conservation education. Therefore it should have a justifiable place in the curriculum of our public and private schools.

The conduct of our lives is guided by broad concepts from within that have been nurtured and developed as a result of direct and vicarious experiences in our daily living. Likewise our *conservation* thoughts, attitudes and actions evolve by having their roots in the slow development of concept-learning. Facts contribute to relationships; relationships nurture concepts; concepts, in turn, direct and influence attitudes of mind; attitudes of mind instigate action; and action has the power to protect our country from the pitfalls of selfishness, greed and waste.

Concepts Clarified

The very import of concepts in the formation of such a conservation philosophy decided the course the writer's thesis was to take. *Conservation concepts* were written as declarative sentences in three areas of conservation; namely, soil, water and forestry. No attempt was made to list these concepts according to grade placement. Each written concept is illustrated by one or a series of kodachrome pictures depicting the three major areas of conservation (water, soil, forests) to be taught, important understandings to be learned, and various pupil-activities to be followed.

Since teaching conservation out-of-doors provides concrete experiences for the child, all of the pictures have an outdoor setting. With each series there are included at least seven activity pictures showing children or adults engaged in various conservation activities. The remainder of the pictures aid in clarifying the meaning of the concepts and, in most cases, are possible situations into which children can move either for an activity experience or for a listening-learning experience. The slides are accompanied by written explanations which convey the message they attempt to teach, what the children are doing if the picture is an activity scene, and what valuable learning concepts are being stressed.

By showing the teacher concrete situations that interpret vital conservation concepts, it is hoped that a more complete understanding of the important learnings can be given the teacher in a very short time. Through the direct contacts with out-of-door learnings, exemplified in the slides, children will begin to understand the complex interrelationship and interdependence of animal and plant life and their environment and, in years to come, will be the citizens which our nation requires to keep its economy secure for the needs of mankind.

Writing the Concepts

To get an over-all view of conservation concepts in use in teaching today, twelve conservation unit guides were reviewed, together with one book representing the collective reasoning of prominent conservation-minded experts in the country today. It was found that the articles listed as conservation units of work in the *Education Index* did not contain any listing of specific concepts. The sources that were used in writing the concepts are given at the conclusion of this article.

The following is a description of the technique used in writing the concepts. Using the material found in the bibliography as the source of statements from which concepts were derived, each concept was copied on a filing

card. Concepts that imparted the same thought but were written in different words were stacked together. From the similar statements brought together, one sentence was framed that embodied all the thoughts present. It was remarkable to note the simple pattern into which the individual cards fell. For example, the concept entitled, "Fertile soil is the basis of successful agriculture," was listed under the heading, *Importance of Soil*, while the concept entitled, "Man has used soil so unwisely that much of is has been lost," automatically fell under the heading, *Erosion of Soil*. Titles were given to each grouping of cards. The titles proved invaluable in listing the concepts in outline form under subject headings. Since consistency in outlining was important, the conservation unit guides again were reviewed to see that no major headings had been omitted in the outline. The written concepts under their subject headings are shown below.

There are twenty-two written concepts in each of the three areas of conservation. Each area is classified for simplicity under four major headings; namely, importance, nature, depletion, and conservation of the resource. The validation of the following concepts has potentialities for research work on a doctorate level. The concepts might be sent to a group of men of known repute in the field of conservation for appraisal on the basis of their relative merit for teaching.

Soil

I. *Importance of Soil*

1. Fertile soil is the most valuable resource on earth.
2. From the soil come the sources of satisfaction for man's three basic needs: clothing, food and shelter.
3. Soil is essential to the growth of plant life on a world scale.
4. Animal life is directly or indirectly dependent upon the soil.
5. Exuberant health can be a by-product of nutritious food which, in turn, comes from fertile soil.

II. *Nature of Soil*

6. Soil is composed of living matter.
7. There are many different kinds of soil, each varying as to color, texture, structure, content and organic matter.
8. Soil is composed of definite layers which form the soil profile.
9. Physical, chemical and biological agencies are constantly at work reducing organic and inorganic materials into soil.
10. Within the topsoil are contained the necessary mineral and organic matter essential for supporting life.
11. The condition of the soil is an important factor in the welfare of both plants and animals.
12. The formation of soil takes a very long time in terms of human generations.

III. *Erosion of Soil*

13. Abnormal losses from the rapid erosion of soil have been caused by man's careless, selfish and ignorant use of it.
14. Erosion saps the land of its fertile topsoil, thus removing the soil's productive capacity.
15. Farms which have an abnormal amount of soil erosion as a result of poor land use are not profitable enterprises.

IV. *Conservation of Soil*

16. Soils that have declined in fertility can be greatly improved.
17. Vegetative cover reduces the amount of soil erosion.
18. Soil and water losses can be controlled by planting alternate strips of food crops and forage crops on the contour.
19. Waterways are necessary to drain surplus water from cultivated fields.
20. Successful conservation methods and techniques used today to check soil erosion are based upon the topography and condition of the land.
21. Conservation of soil resources is being given the cooperation and assistance of Federal, state and local soil conservation agencies.
22. Man's present well-being and that of future generations depend upon man's discreet use of and concern for soil resources.

Forest

I. *Importance of Forests*

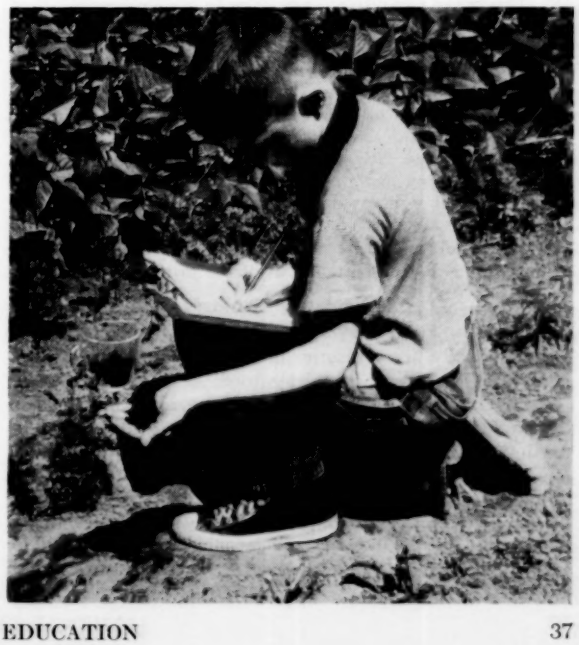
1. Forests are valuable to man as a source of raw materials.
2. The forest floor acts as a sponge in absorbing water, thus greatly reducing soil and water losses.
3. Tree roots help to check soil erosion by binding the soil together.
4. Wind and wind erosion are reduced by the protection of forest growth.
5. Water that falls on the forest floor is absorbed by the protective soil, thus raising the already existing water table.
6. Forests are an important factor in the alleviation of floods by retarding water run-off.
7. Forests afford shelter, food and nesting sites for wildlife.
8. Forests are areas of natural beauty and afford man rest, relaxation, food and recreation.

II. *Nature of Trees*

9. Trees within a forest represent a segment of a highly organized community where plants and animals live in close association with one another.
10. Trees can be identified according to specific characteristics peculiar to the species.
11. Trees differ greatly in their botanical characters and requirements for growth.
12. Not all trees have the same economic value.

III. *Depletion of Forests*

13. Forested areas are being needlessly destroyed through man's careless and thoughtless practices.
14. Improper grazing of livestock in forested areas is harmful to normal forest growth.
15. Every year forest fires cause irreparable destruction to plant, animal and soil resources.
16. Carelessness is considered to be the cause of most forest fires.
17. Natural causes do incur losses in forest crops.
18. Forest replacement takes many years.



IV. *Conservation of Forests*

19. Wise use and management of our forests are essential to the future economy and security of our nation.
20. Reforestation of suitable and needed land will insure an adequate forest crop for future generations.
21. Federal, state and local forestry agencies are abetting forest conservation through assistance, guidance and research.
22. It is important that children and adults learn to appreciate and protect trees.

Water

I. *Importance of Water*

1. All life is dependent upon water.
2. Water is necessary to support animal life.
3. Water is essential for plant growth.
4. Water is an important factor in the removal and purification of wastes.
5. Many industries could not operate without the availability of water.
6. Water is a medium for transportation.
7. Many forms of recreation are dependent upon an adequate and suitable supply of clean water.

II. *Nature of Water*

8. Water, as a solid, liquid or gas, influences living things as it changes form.
9. The evaporation and condensation of water, which is dependent upon the sun's energy, is a continuing process.
10. Water comes from many sources but differs greatly in its biological and inorganic content.
11. Water is not evenly distributed over the land.

III. *Wasting of Water*

12. Man is sometimes careless in his personal use of water.
13. Poor farming methods contribute to much waste of water as well as valuable top soil.
14. Rapid run-off of water causes floods which are disastrous to animal, plant, soil and material resources.
15. Rapid run-off of surface water lowers the underground water table.
16. Pollution, in addition to being a nuisance and a menace to human life, has a disastrous effect on plant and animal life
17. Rivers and streams have become polluted by the careless and ruthless dumping of untreated wastes, refuse and sewage into them.

IV. *Conservation of Water*

18. Improving vegetative cover helps to conserve water.
19. Engineering measures constructed for flood control often benefit agriculture, industry, plant life, animal life, recreation, soil and man.
20. Industries can help stop polluting water by installing filtration devices to purify the wastes before the effluent is returned to the source of supply.
21. Federal, state, city and private agencies directly concerned with the uses made of water resources are a potent force in furthering progress in water pollution abatement.
22. Water is an inexhaustible resource that must be used wisely and appreciated fully if an adequate and useable supply is to be constantly available to man.

Informative Contacts

As was stated previously, the foregoing concepts are illustrated by one or a series of kodachrome slides accompanied by a written explanation to show more clearly what is being implied.[1] Perhaps one of the appealing reasons for undertaking this type of pictorial project was the opportunity it afforded to see first-hand the extent of natural-resource depletion and conservation in this section of the country. Another reason was the opportunity it afforded to interview specialists, such as farmers, sanitary engineers, soil scientists, technicians, forest managers and other government, state and city employees in order to learn their views on important conservation problems.

From a variety of outdoor situations pictures were taken which included such examples as an eroded hillside, a polluted river, a flood control project, a sewage filtration plant, an industrial waste plant, contour plowing, strip cropping, diversion ditches, protected watersheds, selective forest cutting as well as pictures showing children engaged in various conservation activities. The writer is indebted to the many conservation-minded agencies in Boston that suggested specific places where various conservation pictures of soil, forests and water resources could be taken.

By showing to teachers pictures of children engaged in various conservation activities or pictures of possible situations into which children can move either for an activity experience or for a listening-learning experience, it is hoped that teachers will become more aware of the principles, techniques and subject-matter areas involved in teaching conservation.

[1]These pictures (the majority of which were taken within a thirty-mile radius of Boston), accompanied by the text, will be available through the National Wildlife Federation, 232 Carroll Street, N.W., Takoma Park, Washington 12, D. C.

What Is a Seventh Grader?

Seventh graders come in assorted sizes, weights, and colors. They may be either boys or girls and will likely be found scuffling with, shouting at, running to, or whispering about. Their parents are glad to be rid of them in the morning—and their teachers don't know what to do with them, either. They wear clothes with many interesting compartments which hide choice tidbits for surreptitious nibbling—anything from dill pickles to bubble gum, cookies, and candy of all kinds. Their pockets and purses bulge, too, with puzzles, bits of plastic, lollipop sticks, bean shooters, bedraggled lipsticks, pictures, and rubber bands—but no pencils.

Seventh graders like gym period, assemblies, the classmates behind them, nutrition, and the three o'clock bell. They invariably prefer talking all at once to talking one at a time.

Seventh graders don't care for spelling, using the dictionary, reading books, keeping notebooks, any of their classes, and staying in their seats.

Nobody else can ask so many questions or so consistently fail to hear instructions. Nobody else has so many pets and would like to bring them all to school. And nobody else will carry to school half a set of encyclopedias, a slide projector and an index of slides, a stack of National Geographics, an album of treasured wedding pictures, or a Christmas tree for home room.

In seventh graders one finds the chatter of a magpie, the persistence of a snapping turtle, the friendlinss of a stray puppy, the appeal of a frightened fawn, the impetuosity of an avalanche, the sweetness of a dewy rose, the abandon of a basket of kittens.

They fill your day with noise, confusion, whispers, giggles, and endless questions. They test to the breaking point your patience, your sense of humor, your knowledge of everything from the planets to model airplanes. They set awry your carefully planned program for the day, your good disposition, your well calculated pattern of student behavior. Then, at the end of a nerve-shattering day, when you're despairing, bedraggled, completely exhausted, and talking to yourself, the final bell rings. They file out of the room with their angelic smiles, their happy, "Goodnight, Mrs. Chapman," their funny little after-school comments—and you know you're their prisoner. You wouldn't trade them for anything; and you relax, forget the day's confusion, and look forward to their return in the morning.—Helen P. Chapman, *California Teachers Association Journal.*

CHILDREN SHOULD BE SEEN AND---HEARD

Margaret A. McElroy

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In the primary grades one of the first speech skills children should learn is to use proper volume so that they can be heard easily. The average child has sufficient vocal power but is afraid to use it in the classroom.

Release from all nervous tensions is required for attaining the necessary volume. It is also important for the child to think of talking as a pleasurable experience. Many of the textbook publishers are aware of this, so we find in teachers' manuals, in spelling and reading books, and even in social studies texts, explicit exercises for relaxation. A few minutes spent on such activities will encourage children to speak with ease.

Dramatization of the following rhymes is excellent in the primary grades:

Rag doll is tired as tired can be;
Resting each foot and each little knee;
Resting her arms and her shoulders, too;
Resting her head. So do I. So do you.[1]

I am an India rubber man.
I stretch myself as far as I can.
I stretch my neck. I stretch my hands.
I stretch my legs like rubber bands.
Then all the stretch goes out of me,
And I'm as limp as I can be.[2]

It is not advisable to talk about relaxation, but rather to think about being still, having no bones; and to say little jingles in unison to bring ease. This is a popular one:

SCARECROW

Flip, flop, flip, flop,
See the scarecrow go—
Flip, flop, flip, flop,
Bending to and fro.
To the left, to the right,
Back and forth with all his might.
Then the wind is quiet and so . . . .
Flip, flop, flop, (slowly)
Flip, flop, flop, (very slowly)
Flip![3]

After all children are completely at ease a short exercise like the following is advantageous in helping the class sense the difference between a "playground" voice and one suited to the classroom or home. Even the five year olds show an understanding of this.

YOU HAVE TWO VOICES

Your outdoor voice is fine, I'd say,
For shouting out-of-doors, at play;
But in the house we'd all rejoice
If you would use your indoor voice.
Your outdoor voice is big and gruff
And loudest when your games are rough.
Your indoor voice is soft and low—
When you're indoors, please keep it so![4]

Voice power often can be developed through exaggeration. Little tots enjoy playing that they are sailors. They like to call "Ship Ahoy" in a strong voice to an imaginary ship, or to shout "All Aboard" on a large ship that is ready to start.

The booming noise of a big base drum can be heard in this poem. Children can march or beat a big drum as they say—

OUR DRUMS

We took our drums and went for a walk
Boom, Boom, Boom!
We didn't take time to look or talk
Boom to do do do boom!
All the people came out to see
Boom, Boom, Boom!
What all the terrible noise could be
Boom to de de de boom![5]

Any patriotic poem is good to teach strength, not loudness, of voice. Even on a primary level, four lines like these are stirring:

Hurrah for the flag, our country's flag,
Its stripes and white stars, too.
There is no flag in any land
Like our own Red, White, and Blue.

(Continued on page 30)

[1]Lillian E. Billington. *Teacher's Guide: Using Words We Write, Grade Two.* New York: Silver Burdette, Co. 1951. p. 10.
[2]Lillian E. Billington. *Teacher's Guide: Using Words We Write, Grade Three.* New York: Silver Burdett, Co. 1951. p. 12.
[3]L. B. Scott and J. J. Thompson. *Talking Time.* St. Louis: Webster Publishing Co., 1951. p. 35.
[4]Lillian Eichler Watson.
[5]Carrie Rasmussen. *Poems for Playtime.* Magnolia, Mass.: Expression Co., 1942, p. 72.

THE PREPARATION OF A FILE OF EXERCISES FOR DEVELOPING STUDY SKILLS IN THE MIDDLE GRADES

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The middle-grade teacher finds himself confronted with a group of children who differ in various ways. Each pupil has his unique problems and potentialities in reference to his reading needs. The variation in the skills possessed by the individual pupils makes the job of planning the reading program for the middle grades a most difficult one. There are many pupils who still are in need of much of the same type of instruction which they were receiving during the primary years. A new hurdle which is to be faced by the child in the middle grades is the comprehension and recall of a vast amount of content material. As the child proceeds through the grades the demands are even heavier. Therefore, two of the skills for which much practice must be provided should be that of comprehension and recall. This, in turn, calls for material of all types, interests, and levels of difficulty. The answer to this need is the collection of many clippings with accompanying exercises. Before setting up files of such material and exercises a workable plan must be established and certain questions answered.

1. *What Type of File Shall I Use?*

If you are lucky enough to have a steel filing cabinet at your disposal, nothing could be better; but if none is available, there are other ways. For example, either the cardboard files purchased at the office supply house or the ever available paper cartons from the grocery store can be used. The latter can be covered and made quite attractive. One teacher used discarded book jackets and they made very gay containers.

2. *What Kind and Size of Mount is Best?*

Experience indicates that pieces of 9″ x 12″ oak tag are the most satisfactory. Some teachers have used colored construction paper, feeling that color is more attractive and thus is a motivating factor. As so much time and effort goes into the preparation of the practice material, it is suggested that the oak tag be used since the construction paper tears so readily.

3. *How Do I Mount the Selections?*

See that there is a margin of at least one inch of the oak tag around any clipping that is mounted. Thus, if an edge should be torn slightly, the mount could be trimmed and the printed material would not be affected. Use a good quality of mucilage and cover the back of the entire clipping with a thin coat. Place in the proper position on the oak tag and press firmly. Cover with a weight until dry. If for some reason it will be necessary to use two pieces of oak tag, join them with a strip of one-inch adhesive tape or "Scotch" tape. Stapling, in this case, is not satisfactory.

4. *How Shall I Designate the Type and Level of the Selections?*

Print in India ink on the left-hand side about one-half inch from the top of the mount the type of practice provided by that lesson. One the upper right-hand corner affix a signal dot. Use a different color for each level of difficulty. These gummed colored dots are manufactured by the Dennison Company of Framingham, Massachusetts, and can be secured from an office supply house at a nominal sum.

5. *Where Shall I Place the Job Sheet or Exercise?*

The most logical place is on the reverse side of the related mounted clipping. If it is possible to type the exercise, by all means do so. Paste the typed exercise in the same manner as the clipping has been mounted. If not typed, write with ink directly on the reverse side of the oak tag.

6. *How Shall the Exercise Be Filed?*

Secure folders to fit the chosen file. Label with the type of exercise such as "Finding Main Ideas," and a signal dot to indicate the level of difficulty. For example, a fifth grade teacher would probably have four folders labeled "Finding Main Ideas," each with a different colored dot. Each exercise going into the folder will be numbered. At the bottom of the exercise, place the number of the page in the answer book where the key will be found. A piece of paper should be attached to each mount with a paper clip. When a pupil completes an exercise he writes his name and the date on this paper.

7. *How Are the Answer Keys Prepared?*

Secure as many small spiral bound notebooks as you have levels of materials. On the cover of each paste several signal dots to indicate the level of that particular answer book. Number each page. Write the name of the selection, the type of exercise and its number on the

first three lines. Write the correct key on this page. These answer books should be kept at the teacher's desk except when a pupil is checking his work.

8. *How Do the Students Record Their Answers?*

The pupil uses a small piece of paper and records his responses as directed. When he has finished, he then obtains the answer book and finds the key to his exercise. He marks it correctly, dates the paper, and places it in his personal folder. The key is returned to the teacher's desk. When the teacher has time, she examines the folder and has the pupil do over an exercise if it appears to be necessary.

As you have been reading this, many of your questions still remain unanswered, and of these an important one no doubt is, "Where do we get material?" Let us now turn our attention to where to find clippings. The daily newspapers furnish one of the easiest and most fruitful places to look. The large metropolitan dailies often have a section for children. The feature articles devoted to special interests and hobbies offer many opportunities for story material upon which to prepare special job sheets.

An examination of the household magazines distributed by the super-markets will reveal a wealth of material upon which original teacher-made exercises may be designed. *Popular Mechanics* and similar magazines dealing with special interest fields contain short articles to use as a basis for building exercises to develop a skill such as recall.

The papers issued by some Sunday Schools frequently can be used as a source for clippings. The story material in such papers is exceptionally good for our purpose. Frequently these papers are left over and the superintendent is willing to give them to anyone who will make good use of them.

The current events newspapers prepared for children's use are a good source of material. Some such as the *Weekly Reader* have exercises which may be helpful, but usually the teacher can prepare exercises on the content which will suit her specific needs better.

Other sources of material are the discarded textbooks: readers, geographies, social studies, health, and science. It will mean careful screening, but each one contains much material which can be clipped and mounted. If more than one copy of an exercise can be constructed, then all copies should be numbered the same but labeled copy 1, copy 2, etc.

Old workbooks may be cut apart and mounted. The original exercises may be used or the teacher may construct some which more nearly fit her needs. Many teachers have found that much good material is available in the commercially prepared workbooks. When they find a workbook that suits their needs, two copies are purchased and taken apart. Each side is mounted and filed under the appropriate skill. One must always be on guard to see that each exercise will be appropriate and suited to the needs of the child who is working with it; otherwise the experience must be classified as busy work, and not as worthwhile practice in the development of the needed skill.

Among the types of exercises which one should find in such a file are:

1. Choosing the best headline for a single paragraph.
2. Matching headlines with paragraphs.

Recent HEATH Professional Books

SUPERVISION AS HUMAN RELATIONS

John A. Bartky

Contains practical solutions for personality conflict difficulties most often met by administrators.

THE ROLE OF ELEMENTARY EDUCATION

Baxter, Lewis, Cross

Presents a study of the factors that combine to produce an effective elementary school.

TEACHING CHILDREN IN THE MIDDLE GRADES

Alvina Treut Burrows

Covers the needs and characteristics of children in the eight-to-eleven-year age group.

HANDCRAFTS FOR ELEMENTARY SCHOOLS

Moore, Hamburger, Kingzett

Provides a wealth of projects with detailed teaching instructions for every one.

CHILD PSYCHOLOGY—A DYNAMIC APPROACH

Leigh Peck

Summarizes the facts concerning child development and uses them as a basis for child guidance.

D. C. HEATH AND COMPANY

SALES OFFICES: New York 14, Chicago 16, San Francisco 5,
Atlanta 3, Dallas 1, HOME OFFICE: Boston 16

3. Rearranging in proper sequence a series of headlines which are out of order.
4. Choosing a main topic from a list of main topics and supporting details.
5. Choosing from an unorganized list of major and minor ideas, the major ideas.
6. Filling in the minor ideas of an idea line.
7. Filling in the major ideas of an idea line.
8. Filling in alternately the major and minor ideas of an idea line.

Following is a sample of each of the above types of lessons:

The story *Ice Hockey* was used as a basis for an exercise for choosing the best headline for a single paragraph.

ICE HOCKEY

To the student: Read the following story silently, then turn over the page and follow the directions carefully.

Paragraph 1

The game of ice hockey is played on ice and the players wear skates. Each team has six players. Ice hockey is nearly always played by men. It can be played outdoors and on indoor rinks.

Paragraph 2

The sport is chiefly played in Canada, but it is also played in the northern and eastern parts of the United States. The first game was played at McGill University about 1875. It remained an amateur game until 1908 when professional teams were organized. The speed and daring action attracts many people.

Job Sheet

To the student: Write your choice of the best headline for each of the two paragraphs in the story.

Paragraph 1
a. Hockey Players
b. Cold Weather Fun
c. Ice Hockey

Paragraph 2
a. Where Hockey Is Played
b. A Short History of Hockey
c. The First Hockey Game

Beetles serve as a story upon which to base an exercise of matching paragraphs with headlines.

BEETLES

To the student: Read the following story silently and then turn the page over and follow the directions carefully.

Paragraph 1

The Japanese beetle likes to eat everything from an apple orchard to a zinnia. Recently five girls were hired at LaGuardia Airport to see that no beetles were attached to the clothing of passengers.

Paragraph 2

The beetle cannot live at a temperature of fifteen degrees below zero. Thus the beetle does not live in the northern states.

Job Sheet

To the student: Here you will find two headlines. Number your paper from 1 to 2. Select the headline that fits each paragraph and write the headline beside the number of the matching paragraph.

New Jobs For Girls
Beetles Freeze In Cold Weather

Practice in rearranging in correct order several headlines which are not in sequence will help in learning to organize material.

ST. GEORGE'S DAY

To the student: Read how St. George's Day is celebrated in Roumania, and turn over the page and carry out the directions.

The twenty-third of April is a red-letter day for children in Roumania. It marks the beginning of spring and is called St. George's Day.

On St. George's eve the doors and the windows of the houses and stables are covered with willow branches, ivy, and honeysuckle which has been brought in from the neighboring forests. These green decorations are to prevent the evil spirits from hurting men and beasts, so the people believe.

Early in the morning of St. George's Day the girls put on their finest clothes and carry wooden pails to the well to get fresh water. The boys meet them when they return and, of course, they have a contest. Each side throws handfuls of water. The fight usually ends with the girls running home to get ready for the most important part of the day: a merry folk dance on the village green which lasts until late into the night.

Job Sheet

To the student: Here you will find three headlines. They are not in order in which they occurred in the story. Write them in their proper order.

a. How The Day Is Observed
b. The Date Of St. George's Day
c. Decorating For St. George's Day

Choosing a main topic from a list of main topics and supporting details is still another skill for which practice should be provided.

ASH WEDNESDAY

To the student: Read this story to find out the quaint way Ash Wednesday is observed in another land. When you are through turn your paper over and follow the directions.

Paragraph 1

In our country Ash Wednesday, the beginning of Lent, is a church holiday when the sign of the cross is placed upon the forehead of members by the priest. The ashes come from the burning of the palms of the previous year.

Paragraph 2

We find that there is a quaint custom which is celebrated in Iceland on Ash Wednesday. Many days before Ash Wednesday the children are busy making small bags. Of course, the boys ask their mothers or big sisters to help them. The bags are made of every color you could think of and the material may be silk, wool or cotton. They run drawstrings in the edges of the bags and on the ends of these they fasten bent pins.

Paragraph 3

The bags are filled with ashes from the stove and with small stones. The ashes are intended for the boys and the stones for the girls.

Paragraph 4

When the bags are filled the fun begins. As you would expect, the boys oppose the girls. Grown-ups often enter the spirit of the fun, too. The idea is to see how many bags they can pin on each other. Sometimes as many as thirty bags may be pinned on some grown-up who has joined in the spirit of the game.

Job Sheet

To the student: You are to write down on your paper the numbers 1 to 4. For each of the four paragraphs in the story there are three ideas given. Select and write the main idea for each paragraph beside the correct number.

1. a. The beginning of Lent is Ash Wednesday.
   b. Celebrating Ash Wednesday in Iceland.
   c. A church holiday.

2. a. The bags are all colors.
   b. All kinds of materials are used.
   c. What the bags look like.
3. a. The bags are filled with ashes.
   b. Filling the bags.
   c. The girls use stones.
4. a. How the bags are used.
   b. Pinning the bags.
   c. The boys oppose the girls.

The following exercise illustrates the skill of choosing the major ideas from an unorganized list of the major and minor ideas.

BASKETBALL

To the student: Read the following story carefully. Turn over the page and do what it says.

Back in 1891, a young teacher at the Y. M. C. A. College in Springfield, Massachusetts, wanted an indoor sport for the winter months. His name was James Naismith. He nailed a peach basket on the wall and divided his class into two teams, and started a contest to see how many times each side could throw a soccer ball into the basket in a given amount of time.

Today the game of basketball is watched by more people than any other. Last year in the United States over ninety thousand people attended high school and college games. In such arenas as the Chicago Stadium and New York City's Madison Square Garden as many as nineteen thousand people have seen a single game. The season lasts from October to early April.

The game is played by girls and boys of all ages. Every high school and college maintains courts in gyms, in field houses, and out-of-doors.

From its beginning basketball has been a swift, scientific game, played between teams of five players who have speed of foot, good vision, and a high degree of muscular coordination. The swiftness of the action, and the fact that movement is almost continuous, is one of the reasons for the popularity of the game.

Job Sheet

To the student: Here you will find a list of ideas which were contained in your story. Write down the general ideas that are given.

The first game was played with a peach basket.
James Naismith invented the game.
Thousands of people attend basketball games.
Nineteen thousand people attended a game in Madison Square Garden.
Most gyms have a basketball court.
Boys play basketball.
Five boys make up a team.
What a good player needs.
Reasons for the popularity of basketball.

An exercise for filling in the minor ideas of an idea line.

CRICKET

To the student: Read this short story about cricket and then turn over the page and follow the directions.

Cricket is an outdoor game played between two teams. It is the national game of England, and is popular in other British lands. Cricket is also played in some parts of the United States.

The game is played on a level field of grass on which stand two wickets, twenty-two yards apart. Each wicket consists of three stumps, twenty-seven to twenty-eight inches in height. Two pieces of wood rest across the tops of the stumps. The stumps stand near enough together to prevent the ball from passing between them.

The rules of cricket demand that the game be played with the utmost courtesy and ceremony. Many have wanted to change the rules so as to quicken the game, but without success. One noted player remarked, "It would not then be cricket." That remark has come to refer to any unfair or unethical act.

Job Sheet

To the student: Here is an idea line. See how well you can fill in the minor ideas.

Cricket is the national game of England	Equipment need for Cricket	Rules for Cricket
1.	1.	1.
2.	2.	2.
3.	a.	3.
a.	(1)	4.
b.	(2)	

An exercise for filling in the major ideas of an idea line.

THE DIRIGIBLE

To the student: You are going to read a story about a dirigible. When you have finished turn the page over and fill in the main ideas you received from reading the story.

The dirigible is sometimes called a blimp. It has been used for many purposes. We often see it used for advertising some products. It sometimes has served as a mercy ship because it has carried food and supplies to people who could not be reached in any other way. It also has been used to rescue people stranded in some out of the way place.

Two things may be used for covering the blimp. When it is called a "tin bubble," the blimp is covered with a thin sheet of tin. The most satisfactory covering is cotton cloth. It is light in weight, easy to mend if torn, and can be painted with aluminum paint to keep the sun from entering and warming the gases.

The dirigible gets its name from the fact that it can be directed by its engines, propellers, rudders, and elevators.

JOB SHEET

To the student: Use this idea line and fill in the major ideas.

Advertisement	tin	can be directed
Rescue people	cloth	motors
Carry food and supplies	light	propellers
	easy to mend	elevators
	easy to paint	rudders

An exercise for filling in alternately major and minor ideas.

DOGS

To the student: Read the story to yourself and then reverse the page and follow the directions.

There are many kinds of dogs. There is a breed of dog for every kind of person. Big dogs, little dogs, long-haired dogs, short-haired dogs, black dogs, white dogs, red dogs; in fact, one could go on indefinitely classifying dogs.

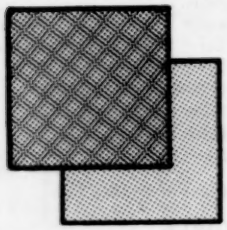
Dogs have lived with men for many years. We know this because we find the bones of dogs and men buried together. In the beginning of time dogs went with men so that they might get a share of the meat from the hunt. In later years the men began to train these dogs so that they would help them hunt. The dogs were taught to carry burdens and to watch the fires.

If you watch your dog, you will see that he does many things that seem odd and strange to us. These are acts that his ancestors did when they were wild dogs. When your puppy gets up and turns around three times before lying down in his dog basket, just remember that the wild dog had to do this in order to tramp down the tall grass in the wild jungle.

Certain kinds of wild dogs can be found in many countries today. These wild dogs do not bark as do our pets. Some scientists tell us that the domestic dog barks because he is trying to imitate the voice of the human being.

There is disagreement as to whether or not dogs were descended from wolves. It is generally believed that the dog and wolf have a common ancestor.

(Continued on page 53)



FORMAL ANALYSIS AS A PROBLEM-SOLVING PROCEDURE

Robert L. Burch
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THE PROBLEM

A widespread practice among teachers is to attempt to develop skill in problem solving by teaching children to use a series of "steps" in dealing with each problem. The pupils are encouraged to ask a sequence of questions, e.g., (1) What is given?, (2) What is to be found?, (3) What is to be done?, and (4) What is a close estimate of the answer? All these things they do before actual computation, mental or written.

This pattern of formal analysis is not intrinsic to arithmetic. It is based upon no laws and rules of mathematics. Rather, its chief claims seem to be that it is logical and systematic, and that, when once learned, it will provide children with a general procedure for attacking any and all verbal problems in arithmetic. For these reasons it is a popular feature of classroom instruction, and is found pretty generally in printed materials for teaching arithmetic and in courses of study.

The ultimate test of the formal-analysis procedure, and, consequently, the fundamental problem of the investigation here reported, is epitomized in the question: Does formal analysis "work"? The search for an answer involved testing and oral interviewing as a means of obtaining information regarding three pertinent questions:

(1) Do pupils tend to score higher in problem solving when they are required to use formal analysis than when they use their own preferred procedures?

(2) Are there any specific single steps or combinations of steps in the formal-analysis pattern which seem closely related to success in solving problems?

(3) To what etxent do pupils who have been trained in formal analysis actually use this procedure when they are not *required* to do so?

PREVIOUS RESEARCH

One earlier study is pertinent to the present study: in fact, it served as the stimulus for the current inquiry. Spache,[1] after testing 158 fifth-and sixth-grade pupils, found that the steps involving the questions: "What does the problem tell you?", "What must you find?", and "Guess which answer is closest to the right answer", discriminated more clearly between good and poor problem solvers than did the step concerned with choosing the correct process or the procedure of actually working out the answer. Spache generously released his test for the present use so that questions left unanswered by his study could be investigated more fully.

To determine the efficacy of formal analysis, Stevens,[2] Sister Immaculata,[3] and Hansen,[4] conducted investigations which indicated that there is a positive relationship between competence in formal analysis and achievement in problem-solving tests. However, none of these studies provided any evidence as to whether this relationship was one of cause and effect or whether it was a matter of concomitance; that is, a parallel relationship between competence in formal analysis and in problem solving.

Two studies provide evidence that ability in formal analysis is *not* closely allied with problem-solving achievement. One, reported by Lazerte,[5] involved giving pupils problems to work and also slips of paper with detailed steps of analysis. In this study, the ability to arrange analysis slips in correct order did not parallel closely the ability to solve problems.

The other study, conducted jointly by Washburne and Osborne,[6] revealed that pupils who worked the problems in their own ways had better scores than did those

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[1]George Spache, "Test of Abilities in Arithmetic Reasoning," *Elementary School Journal*, 47 (April, 1947), pp. 442-45.

[2]B. G. Stevens, "Problem Solving in Arithmetic," *Journal of Educational Research*, 25 (April, 1932), pp. 253-76.

[3]Sister M. Immaculata, "A Critical Study of Arithmetic Reasoning Tests," *Educational Research Bulletin*, Number 6, Washington, D. C. The Catholic Education Press, June, 1927.

[4]Carl W. Hansen, "Factors Associated With Successful Achievement in Problem Solving in Sixth-Grade Arithmetic," *Journal of Educational Research*, 38 (October, 1944), pp. 111-18.

[5]Milton E. Lazerte, *The Development of Problem-Solving Abilities in Arithmetic*. Toronto, Canada. Clarke, Irwin and Company, Ltd., 1933.

[6]Carleton W. Washburne and Raymond Osborne, "Solving Arithmetic Problems I," *Elementary School Journal*, 27 (November, 1926), pp. 219-226.

who first had to respond to some single specified step (such as telling what the problem said, what the approximate answer was, and so on). In neither this study nor the one directed by Lazerte were the pupils required to go through a complex series of specified analytic steps.

The studies cited above comprise the research that is pertinent to the problems of this investigation. The data from these researches fail to indicate clearly whether pupils are helped when they are required to use formal analysis in its entirety. There is, to be sure, some evidence of positive correlation between certain formal-analysis steps and problem-solving success; but even these correlations have not been explored far enough to determine whether they imply a cause-and-effect relationship or only a parallel occurrence. Moreover, none of the data have revealed whether or not pupils are disposed to use formal analysis when they are left to their own resources.

GENERAL PLAN OF THE INVESTIGATION

The investigation, here reported, involved: (1) a comparison of test scores from a formal-analysis test with scores from a non-analytic test made up from the same problems; (2) a detailed study of the extent of parallel successes on each formal-analysis step and the setting down of the correct algorisms (i.e., forms for computation); and (3) the recording of the extent to which pupils actually used formal analysis when they solved problems orally in individual interviews.

The same pupils took both the formal-analysis test and the non-analytic test. Controls over practice effect were exercised in two ways: (1) approximately one half of the pupils were given the formal-analysis test first and two weeks later the non-analytic test; the rest were given the tests in reverse order; and (2) after the data were tabulated and analyzed, a predetermined amount was deducted from means for the test that was administered second.

DETAILS OF THE INVESTIGATIVE PROCEDURE

Design of the testing program.— A thirteen-item formal-analysis test was adapted from a test provided by Spache.[7] A comparable non-analytic test which used the same problems but omitted the formal-analysis features also was constructd. (For instance, item 1 in the non-analytic test was just the problem, "Tom told us that he took a bus last summer to go to camp. The driver told Tom that he drove 232 miles every day, 6 days a week. How far did he drive in a week?") For purposes of brevity in this report, the tests and formal-analysis steps will be referred to in an abbreviated manner according to the following code:

Formal-analysis test .....Antest
Non-analytic test .....Noantest
"What does the problem tell you?" ...."What tells"
"What must you find?" ....."What find"
"What must you do?" ....."What do"
"Guess which answer is closest to the right answer." ....."Guess"
The written form of computation ....."Algorism"

A detailed manual of directions and a record system were developed so that the tests could be administered by teachers to their own pupils. Meetings were held with the teachers prior to the start of the testing program, and on each Saturday during and immediately following the period of testing, so that the necessary steps could be taken to assure adequate uniformity of test administration and scoring.

In order to get reliability data, seventy pupils from Grades Four to Six were given the Antest twice with two weeks intervening and sixty pupils from Grades Four to Six took the Noantest twice with the same intermission between testings. Corrected coefficients of reliability varying from 0.73 to 0.92 were obtained through this test-retest procedure.

The basic data for the study were derived from 305 fourth-, fifth-, and sixth-grade pupils in thirteen Massachusetts and New Hampshire classrooms in which formal analysis had been vigorously and uniformly taught for a number of years. Thus, the experimental situation was practically ideal for the purposes of the investigation. For 165 of these pupils, the Antest was used first, and then, two weeks later, the Noantest (A-NA order of testing). The other 140 pupils were tested in NA-A order, with the same interval of two weeks between the two testings.

> Research can be of practical value to the classroom teacher by (1) pointing to new and promising instructional methods and techniques, and (2) bringing to light serious weaknesses or limitations in commonly used procedures. Dr. Burch's study offers significant help to the classroom teacher in the latter respect.

The scoring of the tests, of course, yielded scores for correct steps and correct final answers; but it also yielded data on pupil successes in recording the correct form for the computation. When the pupil wrote down the correct algorism, such as,

$$\begin{array}{r} 232, \\ \times\ 6 \\ \hline \end{array}$$

he had solved the problem. If he then made an error in finding the answer, his difficulty resided in his lack of competence in computation and was not regarded as attributable to inability in problem solving. The scores for correct algorisms are used almost exclusively in this report because they are the most direct criterion of the usefulness of formal-analysis.

Description of the plan for oral interviews.—It was decided to conduct the interviews among pupils who would be most likely to utilize independently the formal-analysis technique. The fourth-, fifth-, and sixth-grade classes that

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[7]Sample item from mimeographed test supplied by Dr. George Spache, University of Florida.

1. Tom told us that he took a bus last summer to go to camp. The driver told Tom that he drove 232 miles every day, 6 days a week. How far did he drive in a week?

A. What does the problem tell you? Put a line under the answer.
   a) How far the bus driver drove in a week.
   b) How far he drove each day.
   c) How far it was to Tom's camp.

B. What must you find? Put a line under the answer.
   a) The distance the bus went each day.
   b) The distance to Tom's camp.
   c) The distance the driver went in a week.

C. What must you do? Put a line under the answer.
   a) Add 232 and 6.
   b) Multiply 232 by 6.
   c) Divide 232 by 6.

D. Which answer is closest to the right answer? Guess at it.
   a) 238. b) about 1300. c) about 60. d) about 2000.

E. Now do the problem. Put your answer here.....

took the Antest twice to establish the reliability of this test were from schools which place a strong emphasis on formal analysis at every grade level. This extensive training and the double exposure to the Antest meant that these pupils would be most apt also to use formal analysis voluntarily when they were asked to solve problems.

Interviews were conducted separately with each pupil. After rapport was established, the pupil was asked to read a sample problem and then was directed to think aloud as he solved the problem to the point where he was ready to compute. Following this practice exposure, he was asked to report orally his work for each of several other problems that were shown to him. Altogether, twelve fourth-grade pupils, seventeen fifth-grade pupils, and twenty-two sixth-grade pupils were exposed to from seven to thirteen of the test problems, and complete written records were made of the thought procedures as the pupils reported their work. After each pupil had finished his oral working of problems, he then was asked certain pertinent questions which, it was hoped, would reveal still more clearly his method of solving problems.

FINDINGS OF THE STUDY

Data pertaining to relative success on Antest and Noantest.—Table I shows clearly that the Antest-Noantest pupils had higher means for the test which did not require responses to the steps of formal analysis (Noantest). This is so despite the fact that each of the means for the Noantest has been lowered 0.5 of a score unit to compensate for practice effect.[8]

TABLE I

MEAN SCORES FOR CORRECT ALGORISMS FOR PUPILS TESTED IN ANTEST-NOANTEST ORDER

Grade	Number Tested	Means for Antest	Means for Noantest	Differences favoring Noantest
IV	47	5.6	6.5*	0.9
V	64	8.0	9.3*	1.3
VI	54	9.1	9.6*	0.5
All	165	7.8	8.6*	0.8

* The means for the Noantest have been reduced five-tenths of a score unit to allow for practice effect that accrued to the test which was taken second.

The usual statistical formulas for testing the significance of differences cannot be applied directly to the above data because the means for the Antest have been reduced arbitrarily. An indication of the significance, or lack thereof, can be had by noting that the SE_{diff} for all A-NA pupils before correcting the mean was 0.09. When the 0.8 difference for all pupils in Table I is compared with 0.09, a T-ratio of 8.9 is obtained, which indicates that there is very probably a difference in favor of the Noantest mean. When the uncorrected mean of 1.3 (0.8 + 0.5) is compared with SE_{diff} of 0.09, the obtained T-ratio is 14.4.

Although other tables comparing means for the two tests have not been included in this report, it may be stated that the table for the A-NA answers[9] and the tables for NA-A algorisms and NA-A answers consistently reveal differences in favor of the means for the Noantest. Likewise, when the results on both tests were studied for each pupil individually, it was only very occasionally that a pupil scored higher on the Antest than on the Noantest. Consequently, even when one is unwilling to accept the test of significance mentioned in the previous paragraph, this consistent tendency for differences to operate in just the one direction provides strong evidence that the pupils in this investigation performed better when they did not have to write down the steps of formal analysis. Nevertheless, the possibility still remains that the pupils mentally used the steps of formal analysis when solving problems in the Noantest. Further evidence concerning whether or not this was the case will be found in the later section of this report in which the results of the oral interviews are described.

Dependence of correct solutions on one or more analytic steps.—Correlation was used as one means of comparing success on steps of analysis with success in obtaining correct algorisms and answers. However, this statistical treatment failed to reveal whether correct responses to steps actually corresponded to correct responses for algorisms and answers for the same problems. Hence, the more detailed technique of direct comparison by per cents was used also. For instance, an item-by-item study was made of the papers for Grade Four pupils tested in A-NA order. The number of correct algorisms put down by these pupils was counted, and each time a correct response to "What tells" preceded a correct algorism, this fact was tallied. These tallies were then compared with the total number of correct algorisms to find what per cent of the correct algorisms had been preceded by correct responses to "What tells." This same procedure was employed for "What find," "What do," and "Guess." The summary of these comparisons appears in Table II.

TABLE II

PERCENT OF CORRECT "ALGORISM" RESPONSES THAT WERE PRECEDED BY CORRECT RESPONSES TO A SPECIFIC STEP

Grade	"What Tells"	"What Find"	"What Do"	"Guess"
IV—(A-NA order)	44.6	64.3	76.8	50.0
IV—(NA-A order)	35.7	55.4	66.1	44.6
V—(A-NA order)	53.7	72.5	86.3	65.0
V—(NA-A order)	35.8	50.6	79.0	56.8
VI—(A-NA order)	58.2	73.6	82.4	64.8
VI—(NA-A order)	49.6	71.3	86.1	72.2

[8]This compensatory figure of 0.5 was determined after carefully studying the test scores of pupils who took the same test twice as well as certain other relevant data.

[9]In the more extensive report, two sets of scores were tabulated and analyzed: (1) scores derived from counting the number of correct algorisms, and (2) scores derived from counting the number of correct answers.

The striking fact in this table is that many times the pupils were able to write down the correct form of computation without having to respond correctly to one or another of the formal-analysis steps. It is true that pupils tended to obtain correct responses to "What do" a large proportion of the times that they wrote down the correct algorism. Yet, in view of the fact that "What do" required them to select responses such as "multiply 232 by 6," and "Algorism" was a matter of writing down 232, it is surprising

x 6

that from 15 to 25 per cent of the "Algorisms" were correctly written down without prior selection of the correct response for "What do."

In another phase of the study in which combinations involving parallel success on two or more steps and "Algorism" were recorded, it was found that none of the many possible combinations accompanied success in setting up the algorism more than sixty-four per cent of the time. In most cases, the combination successes failed to accompany "Algorism" success from sixty to ninety per cent of the time.

Even parallel success in a step and the setting down of an algorism did not necessarily mean that the response to the step determined the correct algorism. Pupils who had taken the tests in NA-A order had "Algorism" scores that were obtained prior to experience with the steps in the Antest. Item-by-item study of the results for the NA-A testing revealed that about ninety per cent of the times when these pupils were able to obtain parallel correct responses to some step as well as to the "Algorism" in the Antest, they had already correctly written down the algorism in the Noantest two weeks earlier. This means, of course, that the steps may have contributed to some "Algorism" successes. In almost as many instances, though, it was found that pupils achieved success on Noantest "Algorism" and on some step (or steps) in Antest and then would fail on Antest "Algorism." Thus, while steps occasionally seemed to help, they also, at other times, seemed to interfere.

Finally, when means were computed for "Algorism" and for each step in the Antest, it was found that "Algorism" means were always higher than those for "What tells," "Guess," and "What do." Even the means for "What find" were lower than those for "Algorism" about half of the time. Thus, it is apparent that these pupils actually scored better on "Algorism" than on individual steps. When this knowledge is combined with the finding that NA-A pupils seldom were able to respond correctly to a step and "Algorism" if they had not correctly responded to "Algorism" in the earlier Noantest, it would almost seem that solving a problem is a simpler act than is selecting the appropriate formal-analysis steps for that problem.

Information gained from oral interviews.–The basic purpose of having pupils think out loud as they solved problems was to find whether the pupils who had been strongly indoctrinated in the formal analysis procedure actually made use of it. Out of the approximately five hundred exposures to problems during the oral interviews, in only two instances was any use made of steps. One pupil decided what he was to find as he ran into trouble on one problem; another utilized "What find" and "What do" in connection with one of her problems. Furthermore, when pupils were questioned following their oral solving of the problems, each of them stated that he never used formal analysis except when required to do so. Many reported that when they tried to use formal analysis, they became confused.

CONCLUSIONS

1. The pupils involved in this study tended to score higher on the test which did not require them to go through steps of formal analysis. This finding obtained despite the fact that most of the subjects had had good training in using the formal-analysis procedure.

2. Only the step "What do" was consistently correctly responded to prior to correct responses to "Algorism." Even for the relatively few times that parallel correct responses were made to any step and "Algorism," the evidence from the NA-A pupils' test papers indicated that the correct response to the step was not the cause of the correct response to "Algorism." Usually, the pupils had gotten the same algorisms correct on the earlier non-analytical test.

3. The higher means for "Algorism" than for formal-analysis steps indicated that correctly responding to each step may be a more difficult task than is the fact of solving the problem.

4. The oral interviews revealed that even pupils who are strongly indoctrinated in the formal-analysis procedure have little disposition to use this procedure when they are not required to do so.

SPECULATION

The finding that formal analysis is of doubtful value should not be an end in itself, but, rather, should serve only as a stimulus for further questioning. Two such questions would be (1) Why does this analytical procedure fail to accomplish the purpose for which it was designed? and (2) Is there an alternative procedure that should be more widely used? These need to be discussed more fully in a later article, but a brief hint of some possible answers can be suggested now.

One explanation of the inadequacy of formal analysis may be that it fragments the problem into isolated parts. When the pupil writes or designates what is given in a problem, he separates this factual material from the context that relates these given elements one to another. When he notes what is to be found, this is unquestionably psychologically sound, but its mechanical use within the structure of formal analysis probably means that it fails to function as a criterion for selection of appropriate data and operations. The next step, that of specifying what is to be done, would seem to follow easily when one knows what is given and what is to be found, but this apparent ease leads to a glossing over of what is, in reality, a very complex step. Requiring the pupil to estimate the answer before he computes is probably valid and useful, but whether such an estimate should derive from the pupil using what has been noted in the previous steps or whether it should evolve from his studying the problem as a whole is a question needing further study.

(Continued on page 64)

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, Duke University, Durham, North Carolina, 1949. The full title of the dissertation is, "An Evaluation of Analytic Testing in Arithmetic Problem Solving."

LEADING CHILDREN TO CREATIVE MUSICAL EXPRESSION

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and

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The question of how to motivate each child to experiment with musical expression has no single solution. Each child differs in the degree of talent he has for melody, rhythm, and form, as well as originality of thought and expression. The problem, therefore, is to establish several approaches, each inciting a different musical talent.

During the past year the writers experimented with rhythm a great deal, for rhythm is the basic element of music, and the one to which each child can happily respond. To motivate such a responce, a third grade teacher recalled for the children the story of Dr. Doolittle and his trip through the jungle which she recently had read to them. The sounds of the jungle were discussed – the chatter of the monkeys, the cries and screams of wild animals and birds, perhaps the sound of the rhythm of distant drums beating. Several pupils volunteered to reproduce that rhythm, each in his own way, by tapping on the desk with his pencil, and at times adding appropriate words and melody. The results were not only fun, but afforded a great deal of rhythmic dictation which aided many children in developing a steadier rhythmic pulse and an awareness of the rhythm of words.

Next, so that some of the pupils would gain a better feeling of phrasing, experiences were provided with antecedent and consequence. For example: The teacher sang a short, four measure phrase and individual pupils answered it. When the results were good, words expressing the mood of the tune were added.

Further work was done on rhythm, now using rhythmic movements to which appropriate words and melody were added by the class. For example: The fifth grade pretended to be hoisting a sail through rhythmic motion. The teacher asked what a sailor might sing as he did this. In a moment one student sang out, "Hoist the sails." The pupils were very enthusiastic and each response came with its own melody.

> Hoist the sails, hoist the sails,
> We're sailing to Hawaii.
> The sky is blue, the wind is strong . . .
> We're sailing to Hawaii.

Most every elementary pupil writes poetry as part of his language arts program. The writers had the children choose some of these poems to be put to music. An example of this is the poem, "To Our President," which is presented later in this report. However, when a poem was not forthcoming, use was made of what may be termed an "imagery approach." For example: The pupils closed their eyes and the teacher, in her most expressive manner described a person, place or thing. If it was a person she asked who he was, or what he was doing. When a phrase or idea was expressed that would start a song, the teacher requested other related phrases until the expression was complete enough to make a song. The words were then put to music which expressed the thought. Perhaps another time the pupils would close their eyes and tell what they could see. As before, their remarks resulted in a song. Often, instead of saying anything, a child would prefer to sing it. Usually when stimulation was at this peak, songs were composed in two to three minutes.

The pupils enjoyed greatly making up dance steps. Then, making up a tune to go with the steps, perhaps even adding words, not only gave the pupils much enjoyment, but a great deal of satisfaction as well. Those pupils, who for some reason did not join in the dancing, accompanied the dancers on rhythm instruments.

Some children simply did not enjoy poetic expression or original thought, so for them songs without words were composed. The pupils would sit quietly for a moment, then one was asked to sing a musical phrase using the syllable "oo." Phrases were added until a song was completed. Many lovely melodies were created in this way, and it was interesting to find that no one in the class desired to add words to these lovely melodies, because for them, the expression was complete. Of course the pupils who sang a phrase with "oo" were encouraged to use good tone, thus giving each rendition a maximum of the desired musical quality.

When the pupils had sufficient experience in creating songs, they wrote a musical Christmas play. The child who still found creating songs an effort instead of a joyous expression of his thoughts and ideas was encouraged to do

more with staging, costumes and the issuing of invitations. In this way, children less inclined musically were given an opportunity to contribute their own particular talent to the activity. When this creative activity is thus expanded, it affords teachers an opportunity to include it in several parts of the day's program as well.

Just for fun, the class would make a chain song. One pupil would sing a word and the next pupil would sing the same word, then add one, and so on until a complete phrase was made. This also made excellent ear dictation, though joy in participation was seldom hindered by theory.

As a result of this experimentation by the writers it was demonstrated clearly that musical composition is a creative activity which affords each child an opportunity for participation. Through the preceding varied approaches, many pupils, not just those with inherent musical abilities, were stimulated to express freely and enthusiastically, their feelings and thoughts through musical composition. Many of these pupils in time found that this medium of creativity was of value in worthwhile use of their leisure time, and not just a classroom activity.

Concrete evidence of this fact appeared in an upper grade. Two senior high boys brought to their music teacher a Christmas song entitled, "On the First Christmas Day," which they had composed. After the song had been heard by several qualified members of the faculty, they decided to include it in the annual Christmas concert. It has already been accepted to be recorded and sent abroad as part of the International School Music Project, sponsored by the American Junior Red Cross, in association with the Music Educators' National Conference. It will be heard by the youth of other lands through their National Red Cross Societies. This instance proved to the pupils that original musical composition need not be a source of satisfaction to the individual alone, but may have far-reaching satisfaction for others as well.

The following incident, which also was reported in the April, 1953 issue of the *Massachusetts Teacher*, gives added evidence to this statement. The children who wrote the song, "To Our President," little suspected that the President himself would actually hear it.

WELLESLEY PUPILS WRITE SONG TO PRESIDENT EISENHOWER

Tuesday, January 20th was a day of great excitement for everyone. As was the case in many towns and cities all over our country, the children in Wellesley were to be dismissed at noon to enable them to witness by radio and television, the inauguration of President Eisenhower.

The children of the third grade at the Phillips School expressed the desire to write a poem to "Ike" on this memorable day in his life. The following poem is the result of their efforts:

TO OUR PRESIDENT

God save our President,
On this his greatest day.
We will try to help him,
In every sort of way.

Hail to our President!
He is the people's choice.
In him we put our faith
So one and all rejoice!

The pupils have composed several original songs during the year, so that setting the poem to music was a natural outgrowth of their creative music activities.

When Principal Henry J. Barone heard the song, he was favorably impressed with both the words and the music, and felt that President Eisenhower would be pleased to know of its existence. Accordingly he wrote the following letter to the President:

Phillips School
Seaward Street
Wellesley, Mass.
January 23, 1953

Honorable Dwight D. Eisenhower
President of the United States
White House
Washington, D. C.

Dear President Eisenhower;

Tuesday, January 20th was a day of tremendous excitement to children as well as adults. Youngsters recognize the importance of the President—they know that yours is the hand which guides their future.

Immediately preceding your inauguration the third grade pupils of the Phillips School in Wellesley Hills, under the direction of their teacher, Miss Doris McIntyre, wrote the enclosed song, both tune and lyrics.

The song reflects their admiration for your heroic life; their faith in you as their leader.

To inspire such a tribute in our very young Americans must be a rewarding experience.

Respectfully yours,
(signed)
Henry J. Barone
Supervising Principal

On March the third, a reply was received from the White House.

THE WHITE HOUSE
Washington

The Assistant to the President

February 26, 1953

Dear Mr. Barone:

Your friendly letter to the President, enclosing a song written by students of your school, has been received. You may be sure that it is most gratifying to him to learn that the children of our Nation are taking such an active interest in the affairs of our country as is evidenced by the enclosure.

The President extends his very best wishes to both you and your students.

Sincerely,
(s) Sherman Adams

Mr. Henry J. Barone
Supervising Principal
Phillips School
Seaward Road
Wellesley Hills 82,
Massachusetts

The pupils were thrilled and delighted when this letter was read to them. They also received a great deal of pleasure in writing the song. They often follow the salute to the flag by singing their own song to our President.

By learning tactfully to criticize their own work as well as that of their classmates, the children were aided in developing a keener sense of rhythm, tonality, mood, phrasing, and form in music, and developing better listening power in general. This ability led to a desire to learn to notate properly what they had done, and in some instances to harmonize it. This indicates clearly that original musical composition can be used as part of a readiness program for

(Continued on page 64)

DEVELOPING A "TIME SENSE" OF HISTORY

Harold M. Long

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In the study of American history at the seventh–or eighth-grade level many students develop a dislike for the subject, so they say, because they "don't like to learn dates." If their exposure to history has been based on memorizing a list of dates their dislike may be explained easily, for it is difficult to understand, or to like, that for which one has no background of experience or use. One does not memorize a list of telephone numbers unless and until he has occasion to use them. Neither does one appreciate the passage of time until he has begun to accumulate years in his own lifetime. Despite the fact that good teachers do not prescribe a list of dates to be memorized, the bugaboo persists with many students that the learning of dates *per se* is the essence of history.

However, it is true that one of the reasons for the study of history is to learn the meaning of time and to discover that what has happened in the past helps explain the present. How, then, to develop a "time sense," based on factual knowledge, without resorting to sheer memorization of dates? The problem is one of understanding relationships. Certain relationships may be those of cause and effect; others merely coincidental. Several methods which may be used as teaching devices will be illustrated presently.

In their 1944 report[1], the Wesley Committee recommended that at the junior high school level about two-thirds of a year's course in American history should be devoted to the hundred years from 1776 to 1876. By this the Committee did not mean to suggest terminal dates, but rather only a period of emphasis in a time span from 1492 to the present, for all history courses in elementary and secondary schools.[2] Without wishing to be arbitrary in the matter, the Committee was merely seeking to suggest a pattern for instruction that would give continuity to the several courses which a student pursues in his school career and at the same time avoid duplication and monotony. It was further agreed that the stress in junior high school history should be narrative and biographical, with the analytical approach being left to senior high school.

[1]*American History in Schools and Colleges*, Macmillan, 1944.
[2]*ibid.* Graph, p. 71.

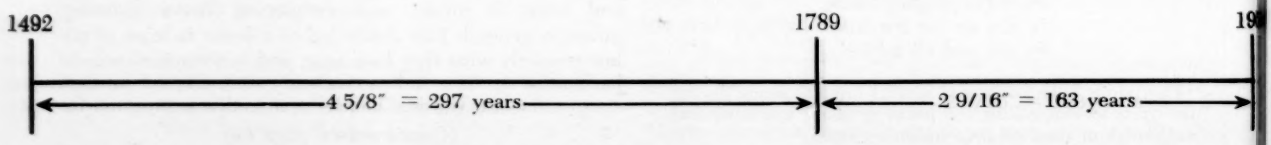
What are some methods or devices "that work" in teaching a time sense of history? The first, of course, is to focus on the student's own memory. "Remember the first TV show you saw? – or the first time you stayed away from home overnight?" Such recollections will illustrate several lessons of history: the excitement of the moment in contrast to the calmer recollections (or "meaning") of the next dav or week; the fading of memory as time passes; the importance of a diary in recording data.

A learning activity to be developed from this lesson might be planned thus: Let each student draw up a list of events that have happened in his own lifetime based on (a) his own knowledge, (b) what he has heard, and (c) what he has read. This list should include both personal as well as public incidents in order to show that, as Tennyson's Ulysses says, "I am a part of all that I have met."

It is an easy step from this understanding to a biographical approach to history. Many librarians will testify that the "best customers" of a library are the students of junior high school age; they are omnivorous in their reading. Certainly not before that age, and probably not afterwards, do individuals read as many books in a given time as when they are junior high school students. Teachers do well, therefore, to capitalize upon this readiness in seeking to make history "come alive." It matters not whether the reading relates to "real" or fictional characters so long as it provides a setting in which the events and movements of history may be located properly.

One lesson, at least, could be given to a chalkboard exercise based on the reading of a poem, *"The Ballad of William Sycamore,"* by Stephen Vincent Benet. Sycamore is a fictional character to whom the author has given a life span of ninety years (1790-1880). The chart below suggests a use of this poem as it is read to the class, and may be modified at the teacher's discretion. For the purpose of teaching time as a "distance concept," it is important that this, like any time-line be drawn to scale; i.e. a given unit of measurement should equal a given unit of time.

A time-line can also be used to show "where" or "how far" certain events or characters are located in time relationships. Is President Washington closer, in time, to Columbus or to President Eisenhower? Let this time-line show:



TWELVE DATES IN THE LIFETIME OF WILLIAM SYCAMORE

(Scale of Time-Line: 1/16" = 1 year)

(For use in teaching "The Ballad of William Sycamore" by Stephen Vincent Benet.[3])

Age	Year	
90	1880	Death of Sycamore as frontier disappeared.
86	1876	Custer and all 264 men killed at Little Big Horn.
84	1874	Glidden invented barbed wire which revolutionized fence building process.
71	1861	Civil War began when Lincoln became President. In 1863 he signed the Homestead Act.
60	1850	California admitted as 31st state.
55	1845	Annexation of Texas, as 28th state, became a cause of war with Mexico 1846-48. "Remember the Alamo."
46	1836	The Alamo, a mission at San Antonio, Texas destroyed by Mexicans, killing a U. S. force.
35	1825	Removal policy adopted by U. S. Government to transfer Indians to Kansas and Oklahoma.
22	1812	War with England and start of Turnpike Era.
19	1809	Lincoln was born in Kentucky.
13	1803	Louisiana Purchase doubled size of U. S.
0	1790	Sycamore born in Kentucky (Indian name for "dark and bloody ground") which was admitted as 15th state in the Union in 1792.

[3]For an annotated version of this poem, see *America Speaking* by Perschbacher and Wilde (Scott, Foresman and Co. 1943), p. 305.

The scale used for the above time-line is: 1/64" equals one year, correct to the nearest 1/16". By the substitutions of alternative dates (Jamestown, Mayflower Compact, Declaration of Independence, etc.) one will discover a number of interesting time relationships, especially if half-way and quarter points are marked off. When for example, *a student asks the teacher,* "What happened in 1786? I want to mark the half-way point between the Mayflower Compact and this year" – then history can be fun!

It is not my intent to discount the difficulty of learning dates in history or to suggest that such is not necessary. Rather, an attempt is being made to indicate ways of giving meaning to dates that will make their recall somewhat easier. Even a diligent student may acquire so much information that he becomes lost among the trees in the forest. Whatever psychologists may contend about the efficacy of mnemonic devices as aids to memory, my experience is that some individuals, at least, can learn in that way. When a student reveals that he does not perceive the significance of the Declaration of Independence in the Revolutionary War, or the relation of that war to the adoption of the Constitution, it may help to resort to the use of an acrostic. Years ago the historian John Fiske gave currency to this one:

1775	L	exington, opening battle of the Revolution.
1776	I	ndependence declared on July 4.
1777	B	urgoyne defeated at Saratoga.
1778	E	stablishment of alliance with France.
1779	R	evenge attacks against Indians and Loyalists in New York by Sullivan and Clinton.
1780	T	reason of Arnold at West Point.
1781	Y	orktown, surrender of Cornwallis, end of war.

With this as a starter students may be encouraged to construct new (and better!) ones for themselves. Events and movements suggest themselves in many ways. In teaching the events that led to the writing of the Constitution, the so-called "Critical Period," one might use the following, or an adaptation of it:

1782	C	onfederation Articles (1781) as basis of government.
1783	R	atification of peace treaty with England.
1784	I	nability of states to agree on trade and money led to depression.
1785	S	tates refused to grant Congress power to regulate commerce.
1786	I	nsurrection led by Shays disturbed Washington.
1787	S	igning of Constitution, Sept. 17, at Philadelphia.

Nothing suggested by these devices is intended to convey the impression that teachers are urged to teach an event for every year, or that history teaching must be accomplished within rigid time periods. If the reader has gained this impression let him re-examine the above to discover that such devices fit into "topical" as well as into "chronological" teaching. No one method of teaching history is here being advocated; rather, only exercises and activities for chalkboard and notebook, to assist the learning process.

If these are used successfully and a foundation is established for understanding "time" and the meaning of dates in history, the subsequent study of history will be made easier and the student will have developed a thinking process about dates as well as a memory of them. When he reads "Fourscore and seven years ago" he will know how to compute eighty-seven years in his own thinking and then to discover what it was to which Lincoln referred. Many students who commit the Gettsyburg Address to memory never stop to think what it means. Similarly, other dates can become good "hooks" on which to hang events and establish relationship; 1876, Centennial of Independence, Year of the telephone, End of Political Reconstruction; 1887, Centennial of Constitution, Passage of Interstate Commerce Act.

Good teaching not only calls for a variety of methods– there is no "one best" – but also for the use of imagination and ingenuity within any one method. Teachers can literally add color to their teaching by the use of colored chalk. Many geography teachers make a common practice of this in map construction on the chalkboard. The practice might become more widespread. Likewise, students should be encouraged to plan and execute displays for bulletin or tack boards. Here the use of colored ribbons to illustrate map locations, or to relate a series of news headlines or pictures, may prove satisfactory.

If the reader has concluded at this point that the methods and devices herein illustrated are intended to be imposed or authoritarian in use, let him be reassured. The mention of these exercises as illustrations does not imply the exclusion of others. Indeed, the very best learning practices will come from a meeting of minds between teacher and class. This calls for teacher-pupil planning.

At the outset of any class period a teacher does well to propose and discuss with the class a program of work for a day, a week or longer, upon which they can agree. Together they should discuss what is to be accomplished. While the teacher may have in mind a rather definite "unit" or major understanding to be achieved, it must be remembered that though the class may work as a group they will learn as individuals. (How many times a teacher will reprimand an individual for not knowing what has been "taught" to the class!) Given the appropriate opportunity many members will suggest their own interests, curiosities, likes and dislikes. These should not be overlooked in group planning. One student may be a philatelist and be able to teach an absorbing history lesson from the subjects of his stamp collection. Another may have an interest in music and can tell about the lives of musicians, or play a set of recordings of American folk music or classical compositions. "What Songs Were Sung When?" gave one class a clear insight into history, starting with "Oh, Susanna!" Opportunities of this sort may challenge better students to push themselves.

The slow learners, on the other hand, who display a lack of enthusiasm for discussion, who read reluctantly if at all, who "don't care about this stuff," can be brought into group activity through what they can and will do. The chance to operate a movie projector, or a filmslide projector, may prove a poor student to be more apt, in this respect, than the teacher himself. An interview with a truck driver about state laws regulating trucks may open a new vista on interstate commerce – which is not afield from American history. Such a topic leads not only back to the Constitution and to federal as well as state laws, but it may also lead into map-making and the reading of simple statistical tables on competing transportation systems. At every point students will discover the importance of change and the trends which cannot be understood without a sense of time in history.

The culmination of any instruction must come in its evaluation. This may take several forms. At least two or three methods should be agreed upon in the teacher-pupil planning. One of the most common, of course, is a written "test" – usually teacher-prepared. It is often overlooked that the making of a good test provides as good an examination as the writing of the answers. This may be done by having the class write questions individually and the teacher make a composite test. But it is also allowable to have students prepare and answer their own questions, with the latter "marked" as, say, 25% of the test. This can be recommended for the especially advanced or especially retarded student. Hints and pitfalls in test-making are discussed and illustrated in Section Six of the Seventeenth Yearbook (1946) of the National Council for the Social Studies, entitled, *The Study and Teaching of American History*. This is a book which should be a part of every history teacher's library.

Many methods of evaluation other than written tests are equally effective. These may take the form of essays, or assembly programs, or exhibits, or field trips to historic sites (even cemeteries!) or socio-dramas. Above all, it is important that they be agreed upon at the outset. When an end-point or purpose for the learning has been established, it provides a better motivation for learning than the mere "assignment" by the teacher. Through such activities students discover that history is much more than the learning of dates, and that it can be fun as well as worthwhile.

A test is not a hickory stick. It is not, and should not be, an instrument of torture. It is a tool to aid learning. It is a breather during which the pupil looks back to see where he has been, and the teacher looks to see where the pupil is to proceed.

A test is not a magic divining rod, prepared only by experts. Pupils can help prepare tests as valid as those of teacher or expert.

A test is not the final payoff of instruction. It does not give the whole answer about a child or his learning. It is only one means of measurement. It should be used along with observations of programs, anecdotal notes, and pupil opinion of himself.—*Teacher's Letter.*

(Continued from page 43)

JOB SHEET

To the student: Fill in the missing ideas in the following line.

Kinds of Dogs		Habits of Dogs		Relation of Dog and Wolf
	lived together for years			
	hunting		did not bark	
	carrying burdens			
	watch fires			

Material such as illustrated in the above samples, when used faithfully, provides the steps leading to the development of the skills of outlining and organization. One thing is assumed: all children will have had lessons in doing such skills before they are left to independent work. Exercises of this type have proven effective in the improvement of recall among children in the middle grades.

In the matter of a year or two a teacher can build a file of materials that will provide for each pupil sufficient practice on any needed skill. The types of exercises herein sampled are only suggestive, and each teacher will construct many different kinds to meet the needs of her class.

Successful principals

—exhibit real expertness in human relations and take a genuine interest in the good fortunes, worries, and difficulties of associates.

—keep their associates informed concerning the more perplexing problems of schools and encourage staff participation in their solution.

—know how to delegate responsibility and how to allow freedom in discharging it.

—do not irritate their colleagues by petty regulations that are designed primarily to control the few.

—are courageous in protecting associates against unwarranted criticisms by pupils, parents, or pressure groups.

—make vigorous efforts to cultivate in pupils an enthusiastic loyalty, strong pride, and a real affection for a given school.

—are generous in commending good work of associates, pupils, and parents.

—resist temptations to become cynical, pessimistic, and disgruntled, and exhibit a real enthusiasm for the importance of their work.

—grasp the broader educational or organizational problems of schools and do not get lost in a maze of time-consuming details.

—strive for teamwork and usually use "we" and "our" rather than "I" and "mine" in discussing successes and problems of schools.

—organize, deputize, supervise, and sometimes compromise. —HEROLD C. HUNT in *Educational Progress* (Chicago Public Schools.)

How can you make use of *your* community? And how can the community help in making your school more vivid an experience in your children's lives? Here are some ways:

INVITE people who work to your classroom to talk about what they do. Don't ask them to come to an assembly – just have them drop in some morning. (Of course, you have carefully prepared things so that children and visitor are already friends, although neither has seen the other. That means one or two conferences with the carpenter or the hairdresser, the gas station attendant or the man who runs a power shovel. They will want to bring *things* with them to help them talk more easily. Pictures that they get from the commerecial agencies which supply them are good. And set a time-limit for the "talk," although you can let the question period go on ad lib.)

TAKE your older children to meetings of civic groups, even planning a special afternoon session with the Rotary or Kiwanis or with the Fortnightly Club to hear a famous author speak. Or have a section of parents, teachers, and children reserved for one concert of the season, and do all the planning through the school and your pupils.

FIRE DEPARTMENTS visit every school in Newton, Mass., put on a drill and put up a ladder to an upper window. Then there is a lesson in calling the fire department, and an explanation of how serious a matter it is to ring in a false alarm.

WHATEVER became of open house *evenings*, with school exhibits, so that for a week parents can roam around and see classes in session? Pawtucket, R. I., in 1926, had more people go through its schools and exhibits in the assembly halls and gymnasiums *than there were in the entire school district*. Try an old-fashioned *exhibit*, with a SCIENCE FAIR for the upper grades, plus a 4-H and scouting display. In other words, get ALL of the educational activities of the community coming to the school by offering its facilities and the teachers' help.

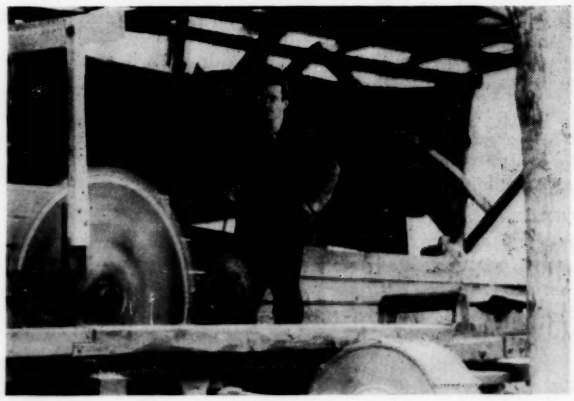
DARIEN, Connecticut, has a plan. The men in that town all go to New York to work, and their wives take them to the station in the morning. Then the cars are free all day for helping carry youngsters around – and they do. Any teacher need only get in touch with the chairman of the PTA Transportation Committee, tell her how many and where, and the fleet is waiting at the schoolroom door.

INSURANCE on field trips is something to consider. Many communities are asking parents to pay $1.25 a year for insurance that covers the pupil from the time he gets into the school bus or leaves for school until he returns. Other towns pay for group insurance on all teachers (about $7 to $10 a year per teacher). Still others take a chance, and many have decided to take no chances, and so have banned any kind of field trip.

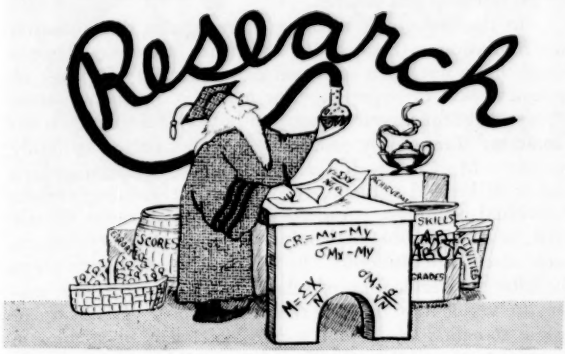
°Too bad. The place of the pupil is in the school, but the school of life is the community. Unless the pupil knows that his teachers are interested in the same things that he is, he never will fully realize what school is for. (EDITORIAL COMMENT starts at ° !)

YOUR NEIGHBOR schools are part of your community. Traveling groups of pupils go from school to school, giving demonstrations and stories on health. This is the TRAVELING TEACHERETTE program of Watertown, Massachusetts. Robert MacCurdy of the high school has had for some years well-trained young men and women who go into the junior high and elementary schools with home-made charts, experiments, models, and winning personalities. Several of the high school group have liked it so well that they are going into teaching.

GET HOLD of those high school youngsters who might be potential teachers, and start a local "helper" program so that they can go into the grades and really see what it is to be a teacher. No nation-wide program is needed, nor an elaborate system. Just release high school senior or juniors for a few hours a week, send them to able and sympathetic teachers who love their work – and that's it. Long before there were student-teacher programs there were good teachers started in that way.



ONE DAY visit that industry which can be found in every town – building new homes. Plan a guided tour, get help from parents for transportation, carry back nails of all sizes, kinds of wood, a blueprint, and some photographs taken with box cameras. Some pupils can be briefed to ask questions about water, lights, heat, sewerage, and *costs*. Plenty of chance for arithmetic here! Let pupils sit in the seat of the off-duty gasoline shovel, or feel the blast from the air hammer that is digging up the street for the gas connection. If you live in a town near the woods, you may be able to see a sawmi!! making houses out of trees!



PUBLIC HEALTH AND SAFETY

1. *Fluoridation of drinking water*

In the October issue of the JOURNAL OF EDUCATION Dzenowagis's study (5) was reported which revealed that grade school children believe a wide variety of misconceptions about health and safety. That some may be due to inaccuracies in textbooks may be deduced from a committee of the American Public Health Association (3), which found numerous inaccuracies in factual information in a review of health education texts, particularly in information pertaining to nutrition. Some of the misconceptions are undoubtedly due to inadequate learning, but some results stem from misconceptions passed on by adults. A prime function of research is correcting misconceptions and aiding in the solution of controversial questions.

In many communities in the United States sharp controversies are occurring between proponents and antagonists of fluoridation of drinking water as a preventative to tooth decay, both sides reporting widely differing information in justifying their views.

A study committee of the National Research Council, Division of Medical Sciences (8), reports that the reduction of tooth decay from fluoridation will vary according to local conditions; i.e., amount of fluorides already present in water. While fluoridation of water is a factor in arresting tooth decay, it is not the entire answer, but should be combined with other measures, especially education in nutrition and care of the teeth.

Contention that addition of small amounts of fluoride are dangerous lacks adequate evidence. 1-1.5 parts of fluoride per million parts of water are safe limits. Fluorides in excess of 2 p.p.m. begin to produce mottling of the teeth, with excessive blackening occurring above 6 p.p.m. The council on Pharmacy and Chemistry of the American Medical Association reports (6) no evidence of toxicity from fluoridation in examinations of children in 120 communities using fluorides in their drinking water.

Both sources stress the importance of competent supervision by board of health authorities in programs providing for fluoridation.

The National Research Council report concludes that communities which include a sizeable child population dependent on drinking water which is low in fluorides should consider the addition of fluorides to their water supply.

That both effective prevention of decay of teeth as well as effective treatment and education in care of the teeth is necessary is shown by statistics on tooth decay derived from several sources. During the early days of the draft in World War II, one man in ten was rejected because of dental decay. The Guggenheim Dental Clinic in New York has reported that 96% of children studied have cavities by age five. Several studies report that an average of two new tooth surfaces per person become decayed each year from childhood to maturity.

2. *Frequency of illness in children*

A random sample of children born in Berkeley, California, was studied and examined annually until 18 years of age (1). An analysis of their medical histories reveals that a high degree of childhood illness is not incompatible with good health. Half of the children had at least one cold per year with a progressive decrease with increase in age. Mumps, measles, chicken-pox and whooping cough were among the prevalent acute communicable diseases, although active immunization for whooping cough sharply reduced incidence of this disease. Less than one-third of the children escaped measles or chicken-pox.

In reference to incidence of accidents (which is the leading cause of death among school age children according to National Office of Vital Statistics reports), boys exceeded girls in number and severity of accidents.

3. *Teachers' understanding of adjustment problems*

Early studies of the extent to which teachers understood the significance of behavior observed in the classroom showed considerable disagreement between teachers and clinicians in rating the seriousness of certain behavior problems. Teachers of a decade or more ago rated breaches of discipline as most serious while discounting such symptoms as withdrawal, suspiciousness, etc. Two studies report considerable change in teacher viewpoints.

Stouffer's (10) sample of 481 teachers ranked such symptoms as withdrawal, depression, fearfulness as serious while placing disruption of class routines last. Slobetz (9) corroborates these findings in reporting a greater tendency for teachers to search for explanations of behavior and to stress positive procedures for dealing with behavior problems, particularly withdrawal. Nevertheless, aggression and disruption of classroom procedures continue to disturb teachers. Apparently, teachers are increasingly adopting psychological points of view in dealing with the adjustment problems of children.

4. *Verbal versus non-verbal intelligence test scores*

Further studies add to the information on the influence of verbal ability on intelligence test scores. Bond and Fay (2), reporting on the importance of reading ability to performance on the 1937 revision of the Stanford-Binet, indicate that in the fourth to sixth grades children with inferior reading ability tend to be penalized by items which are verbal in nature, whereas the scores are biased in a favorable direction in the instances of children with superior reading ability. Further evidence of the judgment necessary in interpreting test data is seen in the performance of bilingual Puerto Rican children on verbal and non-language intelligence tests as reported by Darcy (4).

In the fifth and sixth grades in New York City elementary schools the foregoing series of the Pintner General Ability tests were administered to Puerto Rican children who were bilingual. Marked differences in IQ resulted with significantly greater IQ's being obtained on the non-language tests. Correlation between IQ test scores was .58, which is low, if the tests are presumed to

be measuring the same thing. Similar results were obtained by Jones (7) in a study of the language handicap of bilingual Welsh children on English verbal and non-verbal tests, although the correlation between the two sets of tests scores was higher, averaging .84. Teachers have to exercise great caution in interpreting intelligence tests scores for special groups, especially where verbal ability may be handicapped by such factors as bilingualism.

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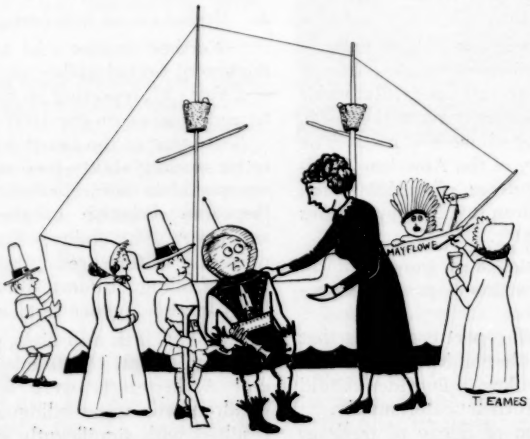
By way of explanation—

Customarily an explanation of purpose or description of objectives comes first in the order of things. In such a fashion, this explanation should have preceded last month's publication when the faculty of the School of Education of Boston University undertook the responsibility for the JOURNAL OF EDUCATION. But we hope this won't be a customary Journal.

The research reports one finds in educational and psychological publications are usually written for other researchers in a fairly standardized and usually technical manner. In keeping with the general policy of the editorial board that the purpose of the JOURNAL OF EDUCATION shall be to present information and ideas which will aid in the improvement of classroom practices and skills of teachers, we hope to report research that applies to the tasks which confront the teacher, and to do so in a style which interests the teacher.

In the beginning we have to recognize that research has limitations. Frequently there are areas of concern which have not been explored experimentally for lack of technical skill or expense. For instance, important areas of personal adjustment and group behavior need much exploration. Frequently research of its very nature is highly specific. Most research deals with the behavior of groups and is of limited value to the teacher in meeting certain individual problems. And frequently the answers do not exist, or may be obtained only from restricted populations such as college students. In spite of these shortcomings the ultimate verification of school practices rests upon systematic verification through research studies. To illustrate: Is the so-called "meaning" method of teaching arithmetic superior to the drill method? Current publications of arithmetic texts are based on this assumption that the "meaning" method is superior, but there is limited research available to support the shift, even though it makes sense from a logical standpoint. (Reported research on this problem points quite conclusively, however, to advantages of meaningful methods especially from the standpoint of transfer of learning and retention after a lapse of time.) Nevertheless, that which seems quite logical to one generation frequently turns out to be quite foolish to the next. We want to report research which is interesting and useful to teachers, and avoid that which is not. We have organized an advisory board on a nationwide basis to report the research that is being produced in the colleges and universities. However, research to be useful does not have to be always that which is done today. There may be questions about which teachers or administrators desire information for which answers exist in research. If we can answer these questions or help to find the answers, we shall be fulfilling a purpose of the JOURNAL. Whatever we do, we would like the material printed in these columns to be interesting to you, be it of a general or specific nature.

In some issues the reports will take a generalized form in which a series of research reports on the common subject are grouped in a single report. More frequently, they will consist of a series of brief reports of recent research.



"But Peter, the Mayflower wasn't a space ship."

NEW BOOKS

Recent Books and Other Publications Helpful to Speech Teachers in the Elementary and Secondary Schools

It is unfortunate to start this review with a rather negative statement but, to anyone familiar with publications in this area, the fact that little is offered on the elementary and junior high school level comes as no surprise. It is an area that needs considerable attention in order that speech education may have proper focus throughout the twelve years that our young people spend in elementary and secondary schools. It is difficult to place the responsibility for this condition, as it is undoubtedly a shared one. The speech teacher, the traditional curriculum, the disinterested administrator, and an apathetic public have all contributed. Only a forward-looking system of education for each of these groups will bring an increase in the number of text books and other publications on the junior high level.

However, there is one saving factor that relieves an otherwise bleak situation and that is the fact that a number of texts and other publications written for the high school level have applications to the junior high and, it might be noted, also include methods which can be adapted to the elementary schools. It is with this in mind that the following material is presented.

In the preface of his new book entitled, *Teaching Speech in the Secondary School* (1), Karl F. Robinson states that "The purpose of this book is to give helpful suggestions and guidance to those teachers in training and in service who desire to teach speech in secondary schools." This aptly sums up a very sound and comprehensive text that should prove invaluable to either the teacher in training or in service.

Robinson has used a very practicable format as he has divided the text into three parts under the following headings:

Part I. Factors Affecting Speech Instruction

Part II. Problems in Teaching the First Course

Part III. Directing Extra-class Speech Activities and Contests

The first part is a comparatively short discussion of the many factors that concern a speech teacher. These include his relationship to the student, administrator, and community. The author has obviously called on his years of experience to give rather pointed and sage advice. This material could be read with profit by any teacher. Chapter VII deals with relationships to other departments which should be read thoughtfully. The cooperative attitude implied here is excellent in theory but not always, unfortunately, the common practice.

Part II begins with a section on planning the curricular speech program. There are some excellent suggestions contained in this chapter but take note of Robinson's comment that "It is not easy or wise to generalize on the exact content or sequence of speech programs over a wide territory. Local conditions may determine and justify a great variety of beginning speech courses." The balance of Part II contains a real wealth of material that could be useful, at least in part, to any grade level. It has the standard chapters on voice, language, and visible action. The difficult task of teaching listening is handled in an interesting fashion. The reader will find a great deal of assistance from the many charts, lists, evaluation sheets, and lesson plans, as well as fine coverage offered in Chapter XVIII, "Textbooks and Teaching Aids."

Part III must not be neglected because it covers in workmanlike fashion the many activities and contests that are related to the speech field. A close acquaintance with these areas is almost a must for the speech teacher inasmuch as many (if not most) school systems expect the inclusion of many of these activities and contests in the extracurricular program and the speech teacher is expected to guide all of them. Dr. Robinson's book is a most satisfactory text in the field of speech and should be a must in the speech teacher's professional library.

Another book, *Teaching Speech in the High School* (2), by Loren Reid, has considerable value for teachers of lower grades. The advertising flier for this book described it as "An unusual book for high school teachers of speech." It is an apt phrase but should have been followed by a statement, "of unusual value" because it certainly has a wealth of information, a direct approach, excellent examples, fine illustrative materials, and usable, although perhaps limited, appendices.

Reid spends only a short time with the philosophy of speech and proceeds in concrete terms to examine the area from the point of view of the beginner. This may mislead the reader of this review to think that it is therefore limited in value. This viewpoint actually enhances its appeal and brings a refreshing newness to its pages. The reader will find considerable help from the concise bibliographical listings that close each chapter.

Chapter 7, "On Being a Clinician Now and Then," is a very interesting discussion of speech correction by the classroom teacher. The material is specific and easily adaptable for the average teacher regardless of grade level.

Other chapters that are particularly helpful are as follows:

Chapter 13 Testing, Grading, Examining
Chapter 15 The Art of Criticism
Chapter 16 Finding New Sources of Ideas

A word should be said about Chapter 17, "Your Career as a Teacher." The author has written this chapter for the beginning teacher but it can be read with profit by the experienced teacher as well. Reid has given a clear picture

of the field and has loaded his book with hundreds of valuable aids and suggestions, most of these practical for junior high school use. Chapter 8, "Speech Making: The Improvement of Content," and Chapter 9, "Speech Making: Improvement of Delivery," could well be used as a basis for the development of a beginning speech course for junior high school students. This book is a worthy companion to Robinson's and will pay for itself many times over as a guide and reference text.

In a third book, *The Teaching of Speech* (3), the authors present a massive amount of material which presents a real problem of selection for use. However, the book has so much to recommend it that this point must not be overemphasized. As its title mentions, it is designed as a textbook for college courses in speech education and this could account for the voluminous information contained within its covers.

Part I, "The Place of Speech in Education," is an excellent discussion of the philosophy of speech and its growth. Adequate reasons are stated for the case of speech education and this section should give solid arguments to those pleading the case of speech. Chapter 2, "The Evolution of the Speech Program," is a most informative and entertaining one covering the history of the field of speech.

Part II, "The Development of Basic Habits and Skills," will be found of real value to any teacher planning a beginners course and is readily adaptable to the junior high school level. Chapter 9, "Developing Meanings," Chapter 10, "Developing Social Adjustments," and Chapter 11, "Developing Effective Listening," are particularly well done and offer many interesting approaches to these important phases of speech. The various areas related to the general field of speech are covered adequately and in rather standard form in Part III. There is not a great deal that is new in this section but as a brushup and a guide for beginners it serves a useful purpose.

Part IV, "Criticism and Evaluation," is good reading on a subject that needs constant examination. Several worthwhile suggestions are contained in this section and pp. 524-539 on measurement and grading are excellent on this knotty problem in speech work. This book can be classified as an extremely able coverage of a vast subject and should be part of every speech teacher's reference shelf.

In the publications field there are many additional aids for the speech teacher. It naturally is not possible to cover them all in the brief space allotted but there are several worthy of mention. One of the most prominent of these is, *The Bulletin of the National Association of Secondary-School Principals*, published at Washington, D. C., The Association of Secondary-School Principals of the National Education Association, 1201 Sixteenth Street, N. W., Washington 6, D. C.

This organization has published many excellent issues devoted to the area of speech. Several of these should be listed because they have excellent reference value. Each of

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these contains a series of articles devoted to the general subject covered in the particular issue. The various authors are usually top people in their respective fields and therefore the material has positive value. Most of these writings are aimed directly at the subject and in many instances have stimulating ideas that can be put to immediate use. Below are listed four issues of this Bulletin. In each issue there is a wealth of material that would be valuable for junior high use.

January, 1948, "Speech Education for All American Youth." An extremely comprehensive coverage of the entire speech field. Philosophy, curriculum, speech in the educational structure, examples of representative speech programs, and persistent problems in speech education are carefully detailed. A most valuable publication.

December, 1949, "Dramatics in the Secondary School." This issue discusses a special area of speech, one that has a strong appeal to students in our schools today. Dramatics from the viewpoint of the administrator, teacher, and community are covered. An excellent section on materials and methods is included along with an analysis of the specific phases and recommendations for practical application.

November, 1950, "Speech and Hearing Problems in the Secondary Schools." Although this issue is aimed at the secondary schools there is much of value for both the elementary and the junior high schools. The information is ably presented and the field is examined from past, present, and future views. The material is of interest to all whether in the general or corrective area.

May, 1952, "Public Address in the Secondary School." A more specific analysis of the phase of speech more commonly called public speaking. An evaluation of worth and the attempt to place this medium in its proper perspective is well handled. Practical suggestions and sources of materials are included.

The Speech Teacher, another publication, comparatively new and of superior quality, should be mentioned. This is published in the months of January, March, September and November by the Speech Association of America, 12 E. Bloomington St., Iowa City, Iowa. Regular subscription price $3.50 per year.

This publication has been the answer to a very real need, namely, a magazine devoted primarily to the secondary school speech teacher. It has, in its brief existance, offered much to the reader. The articles are alive and vital and give a picture of what others are doing in this field. The book review section is well handled and the same can be said for "In the Periodicals." The listing of available audio-visual aids is valuable. "News and Notes" is a friendly little corner of general information. From the point of view of the junior high school teacher this publication could almost be termed a must. The elementary teacher could also derive considerable information that would be very worthwhile.

The mention of the title of a few articles serves to show the type of material offered by this magazine.

March, 1952, "A Philosophy of Speech for the Secondary Schools"
"Developing a Functional Speech Program for the Public Schools"
November, 1952, "The Teacher and His Graduate Work"
"Speech Training in Mexico's Kindergartens and Elementary Schools"
"An Orientation Course in Creative Skills for First Year Junior High School Students"
March, 1953, "Selecting the High School Play"
"A Report on the Young America Films Designed for Use in the Teaching of Speech"
September, 1953, "Teaching Listening Through Evaluation and Criticism"
"The Teaching of Speech in the Public Schools of New York"

As mentioned at the start of this review, text books and other publications specifically written for the junior high level are difficulut to find but careful examination of materials designed for the secondary schools will reveal much that can be used for the junior high speech program. Remember, the task may be a little bit harder but methods, materials and general information do exist for the speech program on the junior high school level. It is hoped that this review will be of help to teachers searching for information in this area.

1. *Teaching Speech in the Secondary School.*
Karl F. Robinson. New York, Longmans, Green & Company, 1951; pp. vii & 438. $4.00.
2. *Teaching Speech in the High School.*
Loren D. Reid. Columbia, Missouri, Artcraft Press, 1952; pp. viii & 301. $3.00.
3. *The Teaching of Speech.*
Andrew Thomas Weaver, Gladys Louise Borchers and Donald Kliese Smith. New York: Prentice-Hall, Inc. 1952; pp. viii & 565, $4.75. (Thomas A. Morse, Winchester High School, Winchester, Mass.)

BOOKS RECEIVED

Administration

THE ADMINISTRATION OF THE MODERN SECONDARY SCHOOL, Fourth Edition. Edmondson, Roemer and Bacon. The Macmillan Company, New York. 1953. $5.00.

READINGS IN EDUCATIONAL ADMINISTRATION. Knight, Edgar W. Henry Holt and Company, New York. 1953. $4.85.

SUPERVISION IN THE ELEMENTARY SCHOOL. Reeder, Edwin H. Houghton Mifflin Company, Boston and New York. 1953. $4.00.

Business

TAPE RECORDING IN BUSINESS EDUCATION. Minnesota Mining and Manufacturing Company, St. Paul, Minnesota, 1953. $1.00.

Elementary

ELEMENTARY TEACHERS GUIDE TO FREE CURRICULUM MATERIALS. Tenth Annual Edition. Horkheimer, Patricia A., Cody, Paul T., & Fowlkes, J. G. Educators Progress Service. Randolph, Wisconsin. $4.50.

MEASUREMENT AND EVALUATION IN THE ELEMENTARY SCHOOL. Greene, H. A., Jorgensen, A. N., Gerberich, J. R. Longmans, Green and Company, New York. 1953. $5.00.
1953. $5.00.

ELEMENTARY SCHOOL TRANSFER PROBLEMS. PRINCIPLES AND RECOMMENDED PROCEDURES. Kopp, O. W. American Book-Stratford Press. New York. 1953. $2.50.

INTRODUCTION TO ELEMENTARY EDUCATION. Millard, C. V., Huggett, A. J. McGraw-Hill Book Company, Inc. New York, Toronto, London. 1953. $4.75.
INITIATING AND ADMINISTERING GUIDANCE SERVICES. Hamrin, S. A. McKnight and McKnight Publishing Company. Bloomington, Illinois. 1953. $3.00.

Literature

PURITAN SAGE, COLLECTED WRITINGS OF JONATHAN EDWARDS. Edited by Ferm, Vergilius. Library Publishers. New York. 1953. $7.50.
THE CORRESPONDENCE BETWEEN HENRY STEPHENS RANDALL AND HUGH BLAIR BRIGSBY 1856-1861. Edited by Klingberg, Frank J. Klingberg, Frank W., University of California Press. Berkeley and Los Angeles. 1952. $3.00.
EXPLORING LITERATURE OLD AND NEW. Orr, E. M., Holston, E. T., Center, S.S. Charles Scribner's Sons. New York. 1953. $3.00.
WAIT THE WITHERING RAIN? Porterfield, Austin L. Leo Potishman Foundation, Forth Worth. 1953. $2.50.
UNTIL VICTORY. Horace Mann and Mary Peabody. Little, Brown and Company. Boston. 1953. $5.00.

English

ENGLISH AT WORK. Bryant, Howe, Jenkins and Munn. Courses: One, Two, Three and Four. Charles Scribner's Sons. New York. 1953. $2.60.

Mathematics

FUNCTIONAL MATHEMATICS. Gager, Mahood, Shuster, and Kokomoor. Books: One and Two. Charles Scribner's Sons. New York. 1953.

Reading

BETTY AND BOBBY. Durrell, Donald D. and Sullivan, Helen Blair. World Book Company. New York. 1950.
THE BIG SURPRISE. Durrell, Donald D. and Sullivan, Helen Blair. World Book Company. New York. 1950.

Secondary Education

THE WORK OF THE MODERN HIGH SCHOOL. Chisholm, Leslie, L. The Macmillan Company. New York. 1953. $4.50.
DEVELOPING THE SECONDARY SCHOOL CURRICULUM. Revised Edition. Leonard, J. Paul. Rinehart and Company Inc. New York and Toronto. 1953. $5.50.

Speech

IMPROVING THE CHILD'S SPEECH. Anderson, Virgil A. Oxford University Press. New York. 1953. $5.50.
SPEECH AND HEARING THERAPY. Irwin, Ruth Beckey. Prentice Hall Inc. New York. 1953. $3.95.

Social Studies

DEMOCRATIC CITIZENSHIP IN TODAY'S WORLD. Adams, A. E. and Walker, E. E. Charles Scribner's Sons. New York. 1953. $2.20.
EDUCATIONAL SOCIOLOGY. Robbins, Florence G. Henry Holt and Company. New York. 1953. $4.75.

Science

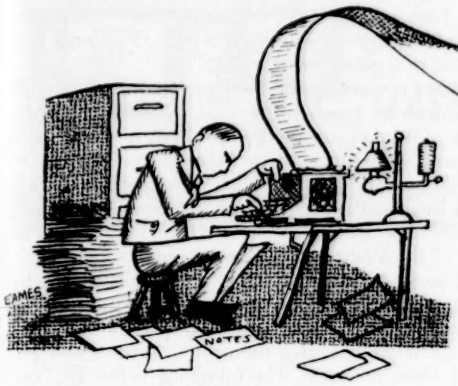
THE MOON. Ganow, George. Henry Schuman. New York. 1953. $2.50.
WORLD IN THE MAKING. Joyce, James Avery. Henry Schuman. New York. 1953. $3.50.
THE WAY OF SCIENCE ITS GROWTH AND METHOD. Somerville, John, Henry Schuman. New York. 1953. $2.50.
LIFE ON THE EARTH. Wyler, Rose and Ames, Gerald. Henry Schuman. New York. 1953. $2.50.
SCIENCE IN DAILY LIFE. Curtis and Mallinson. Ginn and Company. Boston and New York. 1953. $3.96.

Miscellaneous

A HISTORY OF EDUCATION IN AMERICAN CULTURE, Butts, R. Freeman and Cremin, Lawrence A. Henry Holt and Company. New York. 1953. $5.75.
AN INTRODUCTION TO EDUCATION IN MODERN AMERICA. Lee, Gordon C. Henry Holt and Company. New York. 1953. $4.50.
SINGING JUNIORS: SONGS FOR YOUTH. Pitts, Glenn, Waters and Wersen. Ginn and Company. Boston. 1953. $2.68.
NEW HOPE FOR THE RETARDED. Pollock, Morris P. and Miriam. Porter Sargent Publications. Boston. 1953. $4.50.
THE EYES GET IT. New Jersey Secondary School Teachers' Association. Interstate Press. Plainfield, New Jersey. 1953.
REVIEW OF CURRENT RESEARCH AND DIRECTORY OF MEMBER INSTITUTIONS. Engineering College Research Council. State College, Penn. 1953. $2.50.
AN INTRODUCTION TO TEACHING. Lueck, William R. Henry Holt and Company, New York. 1953. $4.00.

MAGAZINES RECEIVED

VIRGINIA EDUCATION BULLETIN. Virginia Teachers Association, Inc. Richmond 19, Virginia. $5.00 per year.
THE KANSAS TEACHER. Topeka, Kansas. $3.00 per year.
WISCONSIN JOURNAL OF EDUCATION. Wisconsin Education Association. Madison, Wisconsin. $2.00 per year.
N E A JOURNAL. Journal of the National Education Association Washington 6, D. C. $5.00 per year.
CLEARING HOUSE. Inor Publishing Company. New York 3, N. Y. $4.00 per year.
EDUCATION DIGEST. Ann Arbor, Michigan. $4.00 per year. year.
EDUCATIONAL REVIEW. Harvard College. Cambridge 38, Massachusetts.
MUSIC EDUCATORS JOURNAL. Music Educators National Conference. Chicago 4, Illinois. $2.00 per year.
OUR FOUR FOOTED FRIENDS. Animal Rescue League of Boston. $1.00 per year.
SCHOOL ACTIVITIES. School Activities Publishing Company. Lawrence, Kansas. $3.50 per year.
THE GRADE TEACHER. The Educational Publishing Corporation. Darien, Conn. $4.00 per year.
NEW ERA. U. S. Penitentiary, Leavenworth, Kansas.
CALIFORNIA TEACHERS ASSOCIATION JOURNAL. California Teachers Association. San Francisco 2, California. $2.00 per year.
VIRGINIA JOURNAL OF EDUCATION. Virginia Education Association, Inc. Richmond 19, Virginia. $1.50 per year.
NEW YORK STATE EDUCATION. New York State Teachers Association. Utica, New York. $2.00 per year.
NEWTON SCHOOL AGE. Newton, Massachusetts, Public Schools.
VENTURA COUNTY SCHOOLS. County Superintendent of Schools Ventura, California.
BOSTON GUIDANCE NEWS. Department of Vocational Guidance, Boston Public Schools. Boston, Mass. Quarterly.
N E A NEWS. National Education Association. Washington 6, D. C.
EDUCATIONAL TREND. Arthur C. Croft Publications. New London, Connecticut. $3.00 per year.



COMMENTS AND NEWS

Of Book Clubs there seems to be no end. They vary in their appeal from highly specialized fields of interest to ones for the general reading public. Some one has said, in talking about some book clubs, that in order to feel socially acceptable one must be able to talk about so-called "best sellers." This type of appeal would appear to be something other than a desire to know a book because of its cultural or informational worth.

Less than two years ago another Book Club appeared on the scene, the Educator's Book Club (70 Fifth Avenue, New York 11, N. Y.). Its continued rapid growth apparently indicates that it is filling an important place in the American scene. A dual selection for December has been announced – James Bryant Conant's EDUCATION AND LIBERTY, from the Harvard University Press, and IN SEARCH OF SELF, by Arthur T. Jersild, published by the Columbia University Press.

The primary purpose of the Educator's Book Club is to encourage all interested adults who participate, either directly or indirectly, in the work of our schools to profit from current, outstanding books in modern education. For teachers faced with ever-increasing problems, the Educator's Book Club provides a convenient opportunity to keep abreast of current practices that are being proved successful in classrooms throughout the country. For school administrators confronted with perplexing changes, the Club offers realistic guidance in developing leadership techniques. For parents and other interested adults, the book selections provide information that will help them contribute actively to the welfare of their community's children and schools.

Through carefully prepared questionnaires sent out to club members at frequent intervals, the Club is guided in its selection by the needs and preferences expressed. Possibly a unique feature of this particular Club is that the members are not required to buy a certain number of books each year.

Human history becomes more and more a race between education and catastrophe.–*H. G. Wells.*

It was Oscar the elephant who got the brilliant idea of an animals' conference. Oscar had had about enough of the strange doings of people. People were always holding meetings and talking of nothing but more wars. And they insisted all the while that they were doing so to make a beter world for children. This didn't make sense to Oscar the elephant, and so he called a vast conference of animals. From all parts of the globe – the earth, the air, the sea – came every creature in the world. "I'm so sorry for the children," Oscar told them. "We must do something for the children."

The story of the animals' conference held in Animal Skyscraper, a most unusual and remarkable building, is full of surprises. The author says he wrote the story for "children and other understanding people." It will delight the young in heart everywhere.

The book described above is THE ANIMAL'S CONFERENCE (David McKay Company, Inc., New York 17) by Erich Kastner. It is not a new book but any of you interested in the world about you, and what teacher isn't, will find the subtle humor of this book intriguing and the subject matter stimulating.

Teaching about world affairs and the United Nations has often proved difficult on the elementary school level in particular because teachers lack information on materials appropriate at these early grade levels. An excellent small pamphlet called *Guide to Teaching about the United Nations and World Affairs*, prepared by Eva M. Dratz of the Minneapolis Public Schools, has recently been published by the National Education Association and the American Association for the United Nations, Inc. (Send 10 cents to the NEA Committee on International Relations, 1201 Sixteenth Street, N. W., Washington 6, D. C.).

The 32-page pamphlet contains a general bibliography for teachers and students, a list of resource organizations, information about the main organs and agencies of the United Nations, but best of all has many suggested specific learning experiences for children in the primary grades, intermediate grades, junior high school, and senior high school. For helpfulness to elementary teachers it is the best reference material we have seen.

An on-the-spot study of teaching as it is practiced in the public schools of the town of Fairfield, Connecticut, will be conducted by the Yale Department of Education in conjunction with the Board of Education in Fairfield. The long-range research program will be financed by the Ford Foundation's Fund for the Advancement of Education, which has already approved a $50,000 grant to cover the first year's work.

The project is designed to answer such questions as: Are prospective teachers receiving adequate professional training today? Should they be required to take more courses in pedagogy and psychology or should they concentrate more in academic subjects? The main purpose of the project will be to study the job of elemenetary school teachers in relation to their professional training. It will also analyse the various duties of teachers in an attempt to decide which are professional and which are technical. This analysis will be used to determine what duties now performed by teachers might be modified, reassigned or discontinued without affecting the essential qualities of their job.

The Yale study will also attempt to determine the influence of the number of children assigned to a classroom not only on the teacher but also on the pupil. At the conclusion of the first stage of the study, an experimental procedure will be put into operation in the Fairfield schools based on the findings of the research project. The Yale-Fairfield study which may extend over a 10-year period, will be coordinated with a similar project, also financed by the Fund for the Advancement of Education, in Bay City, Michigan.

McELROY — CHILDREN SEEN AND HEARD
(Continued from page 39)

To speak louder, children should learn to open their mouths. This is done mechanically at first. The teacher might say, "Let's see who can open his mouth as big as this," while making a circle with thumbs and forefingers. Since all do it together there is no self-consciousness. Now the class might try words that help to open the mouth. Long "i" words that rhyme are fun, particularly if the children act out what they are saying: "fly, cry, sigh, pie, oh my, try, bye, high, why, tie." To culminate this activity have individual children go to one end of the classroom and call to a friend in a good strong voice, "Hi."

If a teacher is working on phonetics and uses the drill on rhyme words to remind the students to open their mouths, a two-fold purpose is accomplished: phonetics and improved speech. Some of these sounds are, "ow" as in how, cow, bow; or "ou" as in ground, pound, sound, found. Long "a" as in pay, day, say, gray; and "aw" as in paw, raw, saw, draw, are fine jaw exercises. The children can be made aware of the kinesthetic in making these sounds.

It must be evident that work on the voice is started by training children to open their mouths. Vowel sounds are ideal for this. After children realize that they can open their mouths it is well to give them little rhymes and jingles in which these are used. The following is fine for "ou" and has a surprise ending which is a delight to children.

THE BEAST

Our neighbor boy let out a shout,
We never knew what 'twas about.
He said a big beast fat and round
Had crossed his floor without a sound.
We went right over to his house,
And there we found—a tiny mouse.[6]

Since good speech should be a part of every lesson, the application of the newly acquired volume can be used frequently: from the opening exercises, with a simple prayer, salute to the flag and pleasant "good morning," until the student, still using a clear voice, says, "good-bye," at the end of the day.

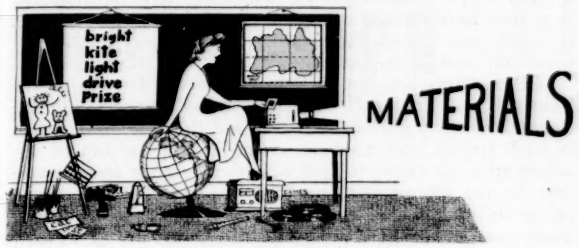
In arithmetic any oral quantitative activity can be made more effective if the questions and answers are spoken audibly. A vocabularly drill is an opportune time to say words carefully so that all may hear them. Interpretation of the new words also will contribute to the improvement of children's voices. Any science lesson, on a primary level, elicits "stories" from the class. The child who talks clearly, that all may hear and understand, should be complimented so that others will try to do as well.

In the lower grades emphasis is placed on reading with comprehension and enjoyment. It is here that speech training aids in bringing out the voice to express meaning and emotion. Children are encouraged to improve their volume as they dramatize simple stories which often are the outgrowth of reading activities.

Children, as well as adults, seldom say their own names clearly. An excellent device to correct this fault in school is to make a game out of saying and hearing names. A simple game may be played by dividing the class into two teams. Let one pupil say, "My name is John Smith;" then a child on the opposite side says, "He said his name is John Smith." The class may serve as judges to decide which side spoke better.

No attempt should be made to correct a child's speech *every* time he talks, for he will lose all spontaneity and naturalness. When a pupil has learned to open his mouth and speak so that all may hear him, he should be encouraged to do it at all times. Never sacrifice subject matter and joy in speaking, however, for a speech skill. A class that has become aware of volume will use it if the teacher reminds the pupils before or after speaking that they must be *heard*.

[6]Lillian E. Billington. *Teacher's Guide: Using Words We Write, Grade Two.* Silver Burdett Co., 1951. p. 57.



BOOKLETS

Guide to Better Hearing A bulletin describing a program for the hard of hearing including suggestions for parents and teachers. Connecticut State Department of Education, Bureau of School and Community Services, Hartford, Conn.; Bulletin No. 52, June 1951.

Stuttering, compiled by Charles Van Riper. Suggestions for parents and teachers. National Society for Crippled Children and Adults, 11 South LaSalle St., Chicago, Ill. 50 cents

The Classroom Teacher Helps the Handicapped Child A 36-page booklet containing suggestions for crippled children, children with impaired hearing, children with visual handicaps, and children with speech disorders. State Department of Education, Augusta, Maine.

Mend Their Speech A comprehensive booklet of suggestions for the classroom teacher, including such topics as speech testing, methods of correcting speech errors, and fitting speech work into the classroom program. Iowa State Teachers College Educational Service Publications, Cedar Falls, Iowa. Issue No. 17, April 1953, 25 cents.

How to Introduce Maps and Globes by Gertrude Whipple. No. 15, How To Do It Series, National Council for the Social Studies, 1201 Sixteenth St., N. W. Washington 6, D. C. 25 cents. Teachers usually discover that pupils' skills in map reading and the use of the globe are seldom developed to their full potential. This booklet is a practical, concise and extremely helpful aid to the teacher who wants to improve these skills. Suggestions are made which are applicable to teachers at grade levels through the junior high school.

Contributions to Reading Ginn and Company publishers, Boston, Mass. Free. This is a series of helpful and practical monographs discussing a variety of topics of interest and concern to teachers of Reading. It is written by experienced teachers and authorities in the field of Reading. New monographs are regularly being added to the series which contains 14 such titles as: A Letter to Parents; Independent Reading Activities; Effective Choral Reading and Speaking; Helping the Superior Reader; Helping the Slow Learner; A Reading Program for the Seventh and Eighth Grades.

Free and Inexpensive Teaching Aids for the Language Arts (Grades 1-12), compiled by Irwin J. Suloway, supplement to Chicago Schools Journal, December 1952, Vol. 34, No. 4, 24 pages. Free. Write to Chicago Schools Journal, 6800 Stewart Ave., Chicago 21, Ill. This is a highly selective, concise annotated listing of various kinds of visual aids grouped according to two levels of appropriateness; Elementary and High School. Each level is subdivided further into specific areas, such as: Reading, Literature, Oral and Written Communication, Mass Media of Communication, Audio-Visual.

Recordings for Teaching Literature and Language in the High School by Arno Jewett, Bulletin 1952, No. 19, Federal Security Agency, Office of Education. Write Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 25 cents. This is a highly serviceable listing of about 500 recordings most of which have been produced since World War II. Groupings include such division as Poetry, Drama, Biography. Sections include International, Historical and Religious selections. This bulletin shows the great variety of excellent recordings literature makes available. The methods suggested for using recordings in class are specific and useable.

Successful Teaching with READ, American Educational Publications, 400 South Front St., Columbus 15, Ohio, 1952. Free. A 32-page booklet contains sound suggestions for teaching vocabulary, several of the study skills, oral reading, and critical thinking about material read. Illustrations are related to the magazine READ, but suggestions are broadly applicable. There are also brief articles by Lou LaBrant on teaching literature, by Edgar Dale on readability of books, and by other well-known authorities.

Adjusting to Individual Differences: Reading Skills; Writing Skills; The Uses of Reading, Warren English Project, School of Education, Boston University, Boston, 1953; 25c for each bulletin. This is a series of three 8-page bulletins devoted to one of the crucial problems in the language arts field; adapting instruction to the wide range of abilities present in most classes. Each bulletin contains many practical, specific suggestions for teaching procedure.

MORE SCIENCE TV REVIEWS

By Kenneth D. Spaulding

HOW DOES IT WORK

Although a large part of the television audience in the United States is in the eastern half of the country, the west has many good programs of local origin besides those on the networks. An example of this is the program *How Does It Work* produced by the Southern Section of the California Teachers Association.

The purpose of this program is not so much to educate the children or grown-ups as it is to better acquaint the general public with the fields of science and how it is taught in the public schools of Southern California. Each week, a teacher and a group of his students from a high school or a junior high school are invited to demonstrate some phase of science and related subjects. A permanent moderator is supplied by the CTA. In the demonstrations as many visual aids as possible are utilized, such as charts, blackboard diagrams, and experiments. The students have

covered such topics as air pressure, water, physiology, electronics, and aeronautics.

JOHNS HOPKINS SCIENCE REVIEW

One television program that was taking shape in the mind of its producer even before there was a station in the area that was ready to broadcast, was the *Johns Hopkins Science Review*. It appears that in some cases some educators were a little reluctant to have much to do with "show business," but with persistent efforts and some experience before the cameras, most of the members of the university are now willing and sometimes eager to have their chance at the television audience. The program has demonstarted its interest appeal and value in the fact that it has remained on the air when other sustaining programs have fallen by the wayside.

It is the aim of the program to present some of the most interesting points of the study of science in its various fields presented at the university in medicine, natural and physical sciences, and engineering. Most of the success of the program can be credited to the long-range planning of the programs presented. For every twenty-six minutes of new program presented, an average of six weeks is spent in script writing, choosing proper demonstrations, and personnel to perform the program.

Programs are presented that exhibit much audience appeal. The art of glass blowing, the science of ballistics used in crime detection, and the use of special types of metals for surgical replacement of bones are examples. Even atomic and nuclear science is explained. Various demonstrations are performed during the program which is narrated by one of the experts from a department of the University.

LET'S FIND OUT

A program produced locally in Nashville, Tennessee, by the Nashville Educator's Council is *Let's Find Out*. It is designed for children and is telecast every day in the late afternoon after school hours. Although it is not specifically devoted to science subjects alone, many phases of science are approached in the program. The motto of the program is more or less expressed in the opening words, "Let's find out about science and song, health and history, how to make friends, and facts, not mystery."

The science programs generally come about one day out of a week and are some phases of natural science which seems most appropriate for the season and the interest that has been generated. These are subtitled the "World Around Us" and are under the direction of the Nashville Children's Museum.

Living plants in the schoolroom are assets that pay off in big dividends for the amount of time and energy invested.

Through the years I have found that whether they are flowering or just decorative foliage, plants help to satisfy one's craving for color and symmetry, and thereby produce an emotional satisfaction. Flowering plants are desirable for their beauty, but leaves with their contrasting shades of green and manifold shapes are equally interesting and beautiful.

On hot days, these plants make the schoolroom look cool and restful, while on cooler days they add a touch of spring. . . .

Most houseplants may be grown successfully in any classroom. However, it is the ivy in my room that attracts the most attention. I have it growing in two large pots at each end of my 20-foot bulletin board. The vines of each plant measure from four to 30 feet long and are intertwined across the top of the bulletin board. The vines have intermingled until they have formed a large, luxuriant border that outlines the ends and top of the board. These plants are several years old; and all ex-pupils always ask about the big ivy.

Other plants also are used in the room. On top of the lockers I have four pots of mother-in-law's tongue. In the center, I have ivy growing in water, and the vines have grown to such lengths that they are trained along the top of the lockers from the center to each side, thus forming an attractive base for the pots of mother-in-law's tongue. Other specimen plants such as the caladium, elephant ears, airplane plant, dumb cane, sedum, and cacti are to be found on the window ledges, book shelves, teacher's desk, and any place where a plant can help to add a touch of color.

However, it is the big ivy that is the main attraction. When children bring their parents to the room, they first show them the ivy and then they introduce their teacher.—MAE BELLE ROBERTS in *The Texas Outlook*.

BURCH — ANALYSIS

(Continued from page 47)

Some of the possible flaws in the use of the analytical steps have been noted briefly in the paragraph above. One of these inadequacies–the tremendous, but obscured, gap that must be crossed as one moves from "What given" and "What find" to "What do,"–provides a clue to what may well be the crucial defect in the formal analysis procedure. When problems are really solved, there must be complex quantitative thinking involved in responding to "What do." The pupil must study the descriptions of the quantities carefully to note whether they are (or are ultimately to be) equal or unequal in size. He must also determine from the context whether the quantities are to be combined or separated or compared. Yet all this thinking, the very crux of real problem solving, is hardly hinted at in the over-simplification of moving directly from "What given" and "What find" to "What do." If this is so, then much of the time that is now devoted to teaching formal analysis might well be better spent in guiding pupils to think more carefully about the sizes, the relationships, and the dynamics of the quantities described in each problem.

McKAY—MUSICAL EXPRESSION

(Continued from page 49)

music theory and instrumental training. Several pupils expressed a desire to learn to play the piano or some other instrument upon which they could play for themselves the songs which they created. Once some degree of assurance and satisfaction was attained, the children showed they could work somewhat independently with only occasional assistance from the teacher, and, in some cases with complete independence.

The approaches set down here are not recorded with any order of preference. Their use depends solely upon the teacher, her class, the degree of motivation, and the interests of the children. However, these approaches do represent promising techniques which other teachers may try to good advantage.

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